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NOTES OF A CASE OF CEREBRAL TUMOUR.

BY J. MATTHEWS, F.R.C.V.S., ROYAL HORSE GUARDS.

A BLACK MARE, No. 11, H. Troop, 15 years old, 11 years' service, was reported at morning stables on the 19th inst. for extreme drowsiness, except when roused at the hours of feeding, but quickly relapsing into a lethargic condition. Admitted into infirmary.

Previous history of the mare showed she was of a quiet temperament and occasionally stupid, walking over stable utensils and against the pillar-posts as if unconscious of their existence; this was not reported, as it was attributed to the carelessness of the attendant.

Leading symptoms were those of exalted functionary activity, evinced by partial and general convulsions, followed by diminution of sensation.

Detailed symptoms (Sept. 19).—Pulse 25, vessel large and soft. Pupillary openings widely dilated, with paralysis of both optic nerves, indicated by inability to see wall or rack, against which it walked; also complete indifference to light. Soon after admission, the patient was seized with convulsions, striking the right side of the head violently against the wall, if standing, or against the ground if prostrate, permanently closing the eye on that side; the pulse rapidly rose, falling after the struggles ceased. As the disease advanced the convulsions took the form of slow galloping action. The breathing was slightly stertorous

throughout; during the quiescent intervals, the animal stood with its nose protruded and firmly pressed against the wall. The box was carefully padded with trusses of straw, abundant cold douches to the head were had recourse to, and a purgative drench administered.

Diagnosis.—Tumour in the brain.

20th.—Little change in symptoms, except an increase in the severity and frequency of the convulsions. Pulse variable, at one time as low as 18. Respiration a little quieter, except when struggling. Bowels acting freely, though no actual purgation has resulted from medicine. The greatest relief, though of a temporary nature, followed the use of the cold douche; it invariably lessened the violence. From the persistence with which the patient strikes the right side of her head, I think the seat of tumour is on the left.

21st.—Convulsions continue. Pulse 34. Repeat douche.

22nd.—Pulse 18, rising rapidly to 58 or 60 beats a minute during the exacerbation. Refusing food for the first time since admission.

23rd. Died.—*Post-mortem examination* showed a small pediculated and lobulated tumour on choroid plexus of right lateral ventricle, and a smaller one of a similar nature on choroid plexus of left lateral ventricle; whilst, growing from the velum interpositum, was a tumour about the size of a hen's egg, which had caused absorption to a corresponding extent of the posterior portion of left hemisphere of cerebrum. Both lateral ventricles were engorged with straw-coloured serous fluid, probably from three to four ounces in quantity. A section of the large tumour showed it to be solid, and closely resembling the structure of liver in colour and density.

Microscopical examination showed the tumours to be sarcomatous, containing spindle-shaped and round cells.

"AZOTURIA" IN HORSES.

BY K. WINSLOW, B.A.S., STUDENT AT THE SCHOOL OF VETERINARY MEDICINE OF HARVARD UNIVERSITY, BOSTON, U.S.A.*

THE subject of my paper this evening is "Azoturia." You may think it a rather hopeless task, on account of what I may call the foggy condition of the pathology of this disease; but if no new matter can be added, it is at least to be hoped that a *resumé* of that already known may put the subject on a better basis for further study. It might be well to state at the beginning that the name Azoturia is an objectionable one in this connection; for as the name only indicates a symptom, that symptom should be a constant and important one, which I believe it is not. The name Azoturia, from azote or nitrogen, strictly implies a super-nitrogenized condition of the urine. As albumen is present in the urine, that would increase the nitrogen to some extent; but Azoturia has always been applied in human medicine to an increase of urea in the urine, and this is not present often enough in this disease to warrant the name of Azoturia. Another reason for changing the name of this affection, is the fact that Azoturia in man is an entirely different disease.

The name was originally applied by Dr. Willis to a condition where there was frequent micturition, a relative and absolute increase of urea without fever, emaciation, thirst, or unusual appetite. But this condition, with no corresponding increase of the food ingested or loss of weight, would be impossible, according to the accepted doctrines of physiology. Dr. Roberts, however, in in his book on urinary and renal diseases, mentions several cases where a large increase of urea was observed in the urine for long periods—seventy to eighty grams, daily, with, however, considerable loss of weight. These he classes under the head of Azoturia. There are no other special symptoms in man. It appears to arise from nervous troubles and mental anxiety, and is sometimes associated with diabetes mellitus. As Azoturia in horses cannot as yet be classified pathologically, the name Hæmoglobinuria would perhaps be the best term, both on

* Read before a meeting of the Boston Veterinary Medical Society.

account of its resemblance to that disease in man, and because it expresses exactly and scientifically what I think is an invariable symptom.

Owing to the resemblance which seems to me to exist between Azoturia in horses and Hæmoglobinuria in man, it may, perhaps, be of interest to compare the two affections; and if such resemblance does exist, it may tend towards a better understanding of the pathology of this disease.

To begin with the etiology in man, the principle cause seems to be exposure to cold. A case is related of a man who could bring on an attack by sitting with his feet in a basin of cold water. In man it does not occur in summer, but usually in paroxysms at intervals, though not invariably so, and is not fatal.

In horses, Azoturia seems usually to be preceded by a period of rest, and comes on suddenly on exercising. Here, also, the disease does not occur in summer, though sometimes in autumn, and more commonly in late winter and early spring. Professor Robertson says it is seen especially in lymphatic farm horses, fed on albuminous fodder, if kept at rest for a few days; going to work, the disease develops from the overloading of the system with nitrogenous products. In the horse Azoturia does not commonly recur, although the same animal may have a second attack during his life. The disease very often proves fatal. The symptoms of Hæmoglobinuria in man are pain in the back and loins, coldness and rigours, and passage of chocolate-coloured urine. In Azoturia of the horse, as you well know, the principle symptoms are sweating, cramps, and trembling of the gluteal and crural triceps muscles, knuckling down and partial paralysis behind, and the passage of dark port wine or chocolate-coloured urine. There is probably a great deal of pain present in the horse, as in man, as shown by the sweating. The trembling may indicate cold, combined with nervous symptoms. There are, of course, other minor symptoms in both man and horse, but it is not essential to mention them here.

Considerable misapprehension of the nature of the urine, in this disease, seems apparent in most of the text-books. In the first place, Professor Williams states that there is a marked increase

of urea, due to increased oxidation of tissue. Also that there is rarely albumen present, but if present, it indicates a severe form of the disease. The specific gravity he says, is very high—1185 or higher—and on trying the nitric acid test for albumen, he gets a heavy precipitate of crystals of nitrate of urea. He also says that there is no blood present in the urine, and no indications of decomposed blood, but that the colour is due to urea.

Professor Robertson goes still farther than Professor Williams; he says there is no blood in any shape or form, and no albumen, and that the colour is due to urea and its salts. His reason for the absence of albumen, is that he gets no precipitate on heating the urine. I will not say that one might as well look for a precipitate of ice on heating an alkaline urine, as to expect a precipitate of albumen; but it does seem probable that one would rarely get a test in that way, unless large quantities of albumen were present.

It is hard to make out crystals of nitrate of urea, or anything else, in the urine, generally on account of its dark colour, especially after precipitating the colouring matters in the nitric acid test. Albumen can, however, be precipitated by acetic acid and heat, and so separated by filtering, and accurately determined. A quantitative test can then be made for urea, with no risk of confounding it with albumen. Only in one case has albumen been determined quantitatively, and in that I found one per cent.

Our analyses seem to show that the specific gravity is not essentially very much altered from normal, and is, perhaps, more constant than in health. Four apparently healthy mares were catheterised and the specific gravities were as follows:—1011, 1035, 1044 and 1050. In five cases of Azoturia the specific gravities were 1034, 1032, 1032, 1030 and 1045.

It might be well to state here that the average amount of urea in the urine of the horse, set down as normal, cannot as yet be relied upon, owing to the few analyses; but the average of those specimens I have examined has been taken; and please bear this in mind, that the average quantity of urea in normal urine is from two to three per cent. In man the average is about two and a half per cent.

Four specimens of Azoturia urine which were examined quantitatively for urea, contained respectively 4, 31-2, 4, and 2 per cent. of urea. Although in some cases the urea is slightly increased, yet this is not at all constant. Blood pigment has been found in all cases, and microscopic examination has revealed crystals of hæmatin, obtained by the sodic tungstate process. In the sediment have been found hyaline, brown, granular, blood and mucus casts, with crystals of calcic oxalate and hippuric acid. Professor Robertson states that granular and epithelial matter is rarely present, and not at all characteristic of this disease; but this is contrary to our observations.

To sum up, albumen is present generally, if not in all cases; urea may or may not be increased, but its increase does not seem to affect the severity of the attack, as would seem in accordance with Professor Williams' theory that the disease is caused by an excess of urea in the blood, and so in the urine. The urine seems to be almost identical in the Hæmoglobinuria of man and Azoturia of horses. In both the urea is normal or increased, in both the same kind of sediment is present, and in both there is blood pigment but no corpuscles, and it is from the urine that the comparison has chiefly been made.

The termination is man, as has been stated, is favourable, the attack occuring at intervals, the urine becoming normal between the attacks. In the horse, however, the case generally progresses from bad to worse, and the patient dies in convulsions and unconsciousness. In man there seems to be an anæmic condition while the disease lasts, due to the decomposition of blood.

As cases terminate favourably in man, there are no *post-mortems;* and in the horse there are no constant lesions, although *post-mortem* appearances are mentioned in most of the text-books. I believe the blood will be always found very dark and fluid, and in an advanced state of decomposition, and the body has the aspect of death from some septic poisoning. This may have some bearing on the pathology, to which we now come. Professor Williams considers Azoturia a hypernitrogenized condition of the blood, due to over-feeding and lack of exercise He believes that the supposed large increase of urea is a physiological result of the foregoing circumstances. Dr. Robertson

believes that Azoturia resembles, and may be in part due to, uræmic poisoning, as in that we have stertorous breathing and coma. He also states that neither suppression of urine or urea is necessary for uræmic poisoning. Dr. Rogers, in one of the veterinary journals of last winter, gives us an explanation, a sort of modification of Professor Robertson's ideas. He says he believes it to be a sort of uræmic poisoning, but in ordinary uræmia the kidneys are not doing their proper work; there is such a large quantity of effete matter produced that suitable elimination becomes impossible, and uræmic poisoning results.

It seems very strange that such a serious and extensive systemic derangement should come merely from good feeding and a short rest; yet this seems to be the idea embodied in Professor Williams' theory.

If according to his idea, urea is a measure of the decomposition of the blood, and so is proportionately increased in the urine; then a large increase in the urine ought to indicate a serious form of the disease. But in one of the cases where most urea was found in the urine, the symptoms were very slight, and the contrary in a case which contained less than the normal amount of urea; the symptoms were very severe and death soon took place.

Again, according to Professor Robertson's theory of uræmic poisoning, where there was least urea in the urine there ought to be most blood poisoning. In two cases, however, where a great deal of urea was present, comparatively speaking, death ensued in a few hours. The amount of urea, then, does not seem to indicate anything, as far as diagnosis goes, nor to have any connection, as far as we can see now, with the course and termination ofthe disease. The symptoms, moreover, do not point at all to uræmia, but are more of a nervous nature. Professor Williams also thinks the resulting increase of urea, and the condition of the urine, is merely a physiological result of effete matters in the blood. But the decomposition of blood and presence of blood pigment, albumen and renal casts, would not usually be called physiological. As far as the arguments here based on the chemical examination of the urine are concerned, it may justly be urged that we have not enough experience to justify any conclusions.

The writer merely offers suggestions. For want of better explanation, we fall back upon the analogy of Hæmoglobinuria in man. In this affection decomposition of blood takes place within the vessels. This same decomposition also occurs in poisoning by arsenic, by phosphorous, in inhalation of carbonic dioxide and arseniuretted hydrogen gas, as well as in many septic diseases. This may indicate a septic origin for Azoturia, and the condition of the horse in which it generally takes places may predispose to the attack, by offering favourable conditions for the growth of a septic germ.

A case of a great deal of interest in this connection, is one related to us by Professor Lyman, in which a case of Azoturia was preceded by Purpura hæmorrhagica. In this instance one seemed to merge into the other, without any apparent cause. But of course a single case, such as this, might be a mere coincidence. If Azoturia is related to Hæmoglobinuria, as has been the object of this paper to show, septic influences seem to favour the disease. In patients subject to malaria, the disease is frequently seen. The kidneys are very probably affected more than would appear from Professors Williams' and Robertson's statements. The presence of casts indicates disordered functions, and may indicate congestion of the kidneys, as seen in ordinary, acute, or passive hyperæmia. The general dark colour of the blood throughout the body, and the almost instant decomposition after death point, however, to its being essentially a systemic disease. In elimination of most septic poisons the kidneys are irritated, and this may explain their condition in this disorder.

Professor Williams has observed, that where most albumen is found in the urine, the case is most apt to terminate favourably. We think this is easily explained, as the albumen results from the decomposition of blood, and may also in part be due to the apparently diseased condition of the kidneys.

But after all, the main question is, to what is the disease chiefly due? May it not be due to a septic poison generated in the general disorganisation of the blood? But in that case, what is the cause of this disorganisation? This cannot as yet be answered, unless by suggesting a specific germ, and this is of course entirely hypothetical at present.

That the disordered condition of the urine is always present naturally follows, it being the principal diagnostic symptom. As this pathological state of the urine is due probably to the elimination of the irritant poison, whatever it is, all the poison is thrown off in this manner in slight cases, and recovery ensues without any serious systemic derangement.

The treatment, in order to be satisfactory, ought to proceed from a good understanding of the pathology, which we do not possess.

If we admit septic causes, then alteratives and antiseptics ought to be resorted to. In this connection, quinine has been most successful in combating this disease in man. Those who believe in Professor Williams' theory should employ cathartics, diuretics, and diluents. To relieve the nervous symptoms, sedatives; and if there is much pain and depression, anodynes and stimulants should be used.

In man, warmth, stimulants, anodynes and quinine have been the most successful remedial agents, and there seems to be no reason why they should not apply as well in the case of the horse: and, indeed, this treatment has proved satisfactory in practice, with the exception of the quinine, which has not, to my knowledge, been used.

"AZOTURIA," MORE ESPECIALLY WITH REFERENCE TO ITS NOMENCLATURE AND PATHOLOGY.

BY RICHARD W. BURKE, M.R.C.VS., ARMY VETERINARY DEPARTMENT, CAWNPORE, INDIA.

Synonyms.—Hæmoglobinuria (Bollinger), Hysteria (Haycock), Azotæmia, Acute Uræmia (Walley), Neurasthenia Acuta, or Acute Nerve-Tire (Burke).

Various theories have been advanced to explain the pathology of this affection, and opinions still appear divided among the various observers. The most favourite are, renal inadequacy and liver derangement; but the explanations given by the supporters of either theory appear to be a little conflicting. Their con-

tention, if we understand their position aright, is that in this disease, there is an imperfect conversion of albuminous substances due to functional disorder of the liver, or to excessive supply of albumin, or to both these factors, which leads to an excess of urates in the blood, defective elimination by the kidneys, and an increase in the quantity of uric acid and urates in the blood. The admission that pre-existing defective capacity of the kidneys or disease of the liver will promote the development and accelerate the symptoms of Azoturia, becomes an unavoidable corollary.

But the almost complete exclusion of what follows in the course of the above changes, in the promotion and distribution of the morbid phenomena, introduces difficulties which to me appear to have been hitherto left unexplained, and which may be called the alpha and omega of this whole process. The central fact remains, therefore, very nearly where it always was; since the main points unfolded by the above theories, and examined and re-examined by successive writers, have made little progress in comprehending what solutions of the problem are justifiable and true. Consequently, we receive from writers an elaboration of their own hobbies, or whatever it may please each enquirer to call the result of his own investigation. Such theories, even though they may be universally accepted as a working hypothesis, yet show there is much need for an objection to them.

The whole question at issue here, is as to the mechanism by which the blood and the urine become impure or altered. Is it by failure of the kidney, or is it a change in the blood, either primary in that tissue, or secondary to some nervous influence? The opinion I have formed is that Azoturia results from over-fatigue of the nervous system, and the blood and urinary changes are due to altered nervous functions.

There are ample reasons for thinking that changes in the nerve centres determine the locality of each symptom in Azoturia, while changes in the relation of the blood, liver, and kidneys, determine its effects. We may adopt for ourselves, then, the *Neurotic theory;* since disturbances in the nervous system, in some form and part, may be regarded as a factor in every case of Azoturia.

Dr. Laycock's "Lectures on Diseases of Organs and Tissues as influenced by the Nervous System" bear directly upon this subject of Azoturia, and I would recommend their perusal in this connection.

We know how functional derangement produces certain definite conditions of temperament, or rather we are as sure as of anything that "certain constitutions are prone to functional derangements of certain glandular organs, both secretive and eliminative, which alter the actual constituent normal condition of the blood," which is made manifest either in an objective or subjective manner; and there can be no doubt, that cause and effect, and effect and cause, both work together in the production of that unstable and irritable state of the nerve centres, which tends to a pathological condition known as "Azoturia" in the horse.

From an analysis of all the symptoms noticed in this disease, I am perfectly sure we can find an explanation for the majority, if not all of them, which is especially marked out as nervous or neurotic.

With reference to the term Acute Uræmia, which implies that the blood is the starting point of the disease, it is known that numerous experiments performed on dogs and rabbits have proved that the subcutaneous injection of varying quantities of urea is followed by no one symptom, or symptoms, belonging to the disease which has been named by veterinarians *Azoturia;* while the experiments of Grèhaut and Quinquad have proved that similar injections of urea, equal to one hundredth of the weight of the body, are always followed by death, without producing any symptoms of uræmia in the above animals. The presence of a large quantity of urea in the blood of animals does not seem to exert any injurious influence in producing the symptoms of this disease.

The presence of urates in the urine is secondary, a result of organic changes due to altered innervation; whilst albumin in the urine is not always present, and may be frequently produced, not only in the urine, but in the saliva and some other secretions and excretions, by the injection of various therapeutic agents. Semmola*, Vulpian, Dessales and others

* Annali Univ. di Medicina, Feb., 1885.

have shown that after hypodermic injections of pilocarpine, for example, the saliva, bile, and other secretions become richer in albuminoid substances coagulable by nitric acid, though none was to be found before the injections. In Nephritis, in Paralysis agitans, and other nervous disorders, albumin* has been traced more or less in all the secretions *and* excretions. M. Strauss rendered the urine of animals albuminous by pricking the fourth ventricle, or by injecting glucose under the skin, without the presence of any organic lesions in the kidneys.

The connection of nerve disorders with uterine complaints is well known to the practitioner of human medicine, and this may again explain, perhaps, the relative frequency of Azoturia in mares, as compared with geldings or stallions. It would be a great mistake, however, to conclude that there is any necessary or constant connection between the two; for, although very frequently the nerve disorder has originated in connection with uterine disturbance, in a large proportion of the cases we have seen, it has developed independent of it, as in males.

I have no hesitation in asserting it to be my firm belief that many of the incurable cases of progressive muscular atrophy, (especially noticed in connection with the crural muscles, and occasionally the muscles of the scapular region), paralysis, and many other diseases of the nervous system, commence as Azoturia, and when in this state are quite amenable to treatment. Death is usually the result of some sequela, in severe cases.

What are the usual characteristics of such patients? Can they be described as weak, debilitated, and weedy-looking? Certainly not; and the experience of practitioners of human medicine agrees with our own in an especial manner. For Dr. T. Stretch Dowse† describes such patients as being usually "robust, stout, plethoric, and apparently cheerful." Dr. W. S. Playfair‡ writes, that occasionally such patients are "overburdened with an excess of unhealthy adipose§ tissue." At a recent meeting of the balneological section of the Gesellschaft

* Kottmayer and Kathrein's test by mercuric chloride in *Die Fortschritt*, 20 April, 1885.

† Dr. J. S. Dowse, "On Nerve-Prostration," 1880, p. 11.

‡ Dr. W. S. Playfair, "On Nerve-Prostration and Hysteria," 1883, p. 91.

§ *Deutsche Med. Wochenschrift*, 7 May, 1885.

für Heilkunde, held in Berlin this year, Dr. Joseph, of Landeck, read a paper upon this subject, describing the condition of neurasthenic patients as "robust, muscular, and ruddy complexioned."

Among the drugs which have given most relief in cases of Azoturia in the horse, and which have been found reliable in our hands, we find the following, and I enumerate them in the order of their value, namely, chloral, opium and morphia,* belladonna (Walley) and atropine, chloroform, bromide and iodide of potassium, ergot, turpentine, quinine, ether, alcohol and ammonia; and, I would add, local friction *(massage)* and electricity. The reflex influence of mechanical stimuli of the cutaneous nerves on the cerebro-spinal circulation, is of considerable importance.

I am tempted to put forward the above facts, because it is one of the most remarkable instances of the strange and multiform phenomena which neurotic disease may present, which it has ever been the lot of veterinarians to witness. Coincident with nerve disorder is the change in the constitution of the blood, due to changes in the secretory and excretory organs, particularly the liver and kidneys. On the soil so prepared are often developed the graver symptoms, such as paresis or paralysis, disorder of motion, hyperæsthesia, hystero-epileptic seizures, convulsions, and many others which must be familiar to us all in dealing with such cases. The muscular tremors, the unsteady gait, the loss of balance, etc., so marked in many cases, may be due to the nerve current from the cerebellum, in its descent to the muscles, finding an obstacle in the spinal cord altered by the morbid process. The heart's action is rendered morbidly rapid in some, slow in other cases, by reflex action through the nerve centres from irritation elsewhere, and especially through uterine irritation in mares during œstrum. The profuse perspiration, so characteristic of many cases, is again the result of faulty innervation causing local hyperæmia and increased action of the skin.

In regard to the pathology of this affection, Erb, quoted by Strahan, says: "It seems most natural to refer to fine

* *Journal of Comparative Medicine and Surgery*, April, 1885.

disturbances of nutrition in the cord, such as we are still obliged to assume in so many diseases of the nervous system." Irregular feeding, irregular work, want of proper exercise, reflex intestinal and uterine irritation, etc., all contribute to the production of this affection, not of themselves, but certainly through the nervous system. Death results from inanition, not from any defect in the supply of, but due to a want of power to assimilate, the body-fuel which is supplied, or to what is termed *exhaustion.*

OBSERVATIONS ON SOUNDNESS.

BY R. H. DYER, M.R.C.V.S., LIMERICK.

(Continued from page 326.)

THE remarks which appear in the last number of this Journal, from the pen of Mr. Pallin, require some slight notice. Doubtless it was a fact that the cases cited by that gentleman were the subjects of enlarged pigment, but nothing has been written in proof of those substances having been the cause of shying. I may with truth assert that fifty times three cases—and more—have been examined by myself, and that the shyers had *not* any pendulous body such as Mr. Pallin describes; and I will go further, and assert that not one case in which I have observed the *corpora nigra* enlarged has the animal been a shyer. It is a common practice with me to ask if the horse under examination shys, *i.e.*, if I observe anything about the eye which is likely to interfere with vision—the question is put with a view of gaining information. This is the kind of thing which renders veterinarians so frequently open to ridicule. One veterinary surgeon will reject, in consequence of a certain defect (*as it may be considered*), and another will immediately give a certificate of soundness, which puzzles the public. It is mere matter of opinion whether those pendulous bodies are the cause of shying or not, and I am decidedly of opinion no evidence has been produced to prove it. It is now a question whether the presence of such growths should be considered an unsoundness; for my part, experience teaches that they do not constitute unsoundness, nor should I like to reject an animal with such a growth; at the same time I may state that I am at all times open to conviction.

For further information upon this knotty question I may state

that a gentleman purchased a horse which had these pendulous bodies to a very great extent, and the veterinary surgeon who examined rejected the animal in consequence of having what he called "*so much disease in the eyes.*" The horse was brought to me. I was asked if those black bodies were an unsoundness. My reply was that I did not consider them as such. The horse was purchased, and the owner was a client of mine for many years, until, in fact, I left that district, Waterford. The horse was driven and ridden for several years, and I purchased him as a brake-horse. He was in my possession three or four years, driven by myself, daughter, and servant, and *never was known to shy.* Those appendages were largely developed. His eyes were perfectly normal as to shape, etc. It is a defective organisation in the shape of the globe, to my mind, which causes shying in many instances. It must be borne in mind that the slightest deviation from a perfect form or arrangement of parts in *any* optical instrument, will cause or be productive of some not easily explained inconveniences in vision.

The ears will next be taken notice of, to ascertain if warty excrescences appear upon them. I never heard of an animal being rejected for the presence of warts situated upon the ears, unless they interfered with the putting on a bridle. Poll-evil is a complaint not frequently met with in the present day, and doubtless most practitioners have no cause for regret, as nearly every case I have met with was on a horse the property of a poor man, whose pocket was not encumbered with the means of paying a long score. It is well known that such an affection is tedious to cure. An animal suffering from it at the time of examination, would be rejected as a matter of course. The jugular veins are not now so likely to suffer as formerly, since blood-letting is discontinued ; still, it is advisable in all cases to look at them closely. Should one of these veins be absent or impervious it would be mentioned, and the horse rejected, although the loss of one may not inconvenience the animal, except under peculiar circumstances. It has been customary at this stage of the examination to grasp the throat to cause the animal to cough, but further remarks will be made in other place. For my part I have discontinued the practice for some years.

The withers will next arrest the attention of an examiner. It is not an uncommon occurrence with some practitioners to overlook some minor points, for the reason that all the diseases at this particular part are produced by a misfitting saddle or roller. This seems a sufficient excuse for the seller, and the buyer will, as a general rule, accept the explanation: that is to say, he concludes the purchase. We should, however, remove from ourselves the probability of blame by giving an opinion in a candid manner as to the state of the part, together with the likelihood of its being placed under treatment at some not far-distant date. The muscles of the shoulder will require a little looking at. Occasionally, horses are met with which have ill-developed muscles upon the scapula and adjacent parts. I have seen some horses whose spinal muscles were almost entirely absorbed. The most interesting case I ever witnessed was that of a mare which had been purchased by a gentleman (?) dealer, and brought to the town on her way to London. I had an opportunity of not only seeing the case in its wasted condition, but I saw the operation performed for its cure, and its result. The owner of the mare accosted me thus: "I say, doctor, can you cure this mare?" pointing to the shoulder. My reply was in the negative. "Well," says he, "I can! in five minutes." "Oh!" I replied, "so could I in the manner you refer to; but I don't call that a cure." He inquired what I meant. I made motions with my mouth—as if to blow through a quill. "Ah!" said he, "that's *jest* it." He procured a small knife, a quill, and a needle and thread, set to work, and produced as nice a formed shoulder as could be moulded, and like the one on the opposite side. I inquired how he managed these things, when he informed me that upon arriving in the metropolis he should remove the stitches, and in about forty-eight hours the air would commence to make its escape (after he had disposed of the animal, of course). He declared he never was detected in the trick. I believed that man was as "knowing as a jailer," as the saying is. He used to make frequent visits to London with some of the veriest screws that were to be found. Some of his purchases were blind, broken-winded, roarers, bad-tempered, vicious, kickers in harness—and, in short, many of his horses

possessed everything calculated to constitute a bad bargain. The men who carry on this trade (there are many engaged in it) make it a good thing. They each take from twelve to twenty, or more, from the south of Ireland, at cheap rate, say about 30s. each from this to London. They are packed like sheep in trucks, so that they cannot hurt one another. On their arrival in town they are auctioned off as soon as possible. Now and then some usefully-sound animals are sent across the water, and I believe there is considerable improvement in the class of late.

In directing attention downward from the scapula, we shall learn if anything is amiss at or near the elbow. Pursuing our course towards the carpus we shall have to be somewhat more cautious than we have been, perhaps. During this glance we will, of course, take a peep at the pectoral muscles between the arms, in order to ascertain if a rowel or seton has been inserted there. If all these parts are believed right, we shall now scrutinise rather closely the knee, leg, and foot. It is necessary to be particular in the examination of the carpal joint, especially in hunters, and for this reason: should a blemish be present on the knee, which renders that joint in any way defective or stiff, it will be desirable to dwell a little, and ascertain the extent of injury sustained. This is learned in two or three ways: first, by manipulating the skin in front of the joint; secondly, by moving the skin once or twice upwards and downwards; and, lastly, by flexing the limb, viz., by holding the foot up towards the elbow. If the point of the toe cannot be made to touch the olecranon without force it must be inferred that some derangement has taken place in the carpal or lower joints, and this will require nice manipulation—in some cases—so as to form a correct opinion. Presuming the carpus is the seat of the derangement, we must hesitate for a moment in pronouncing the part sound until we have satisfied ourselves that the horse is capable of undergoing *all* the work he will be called upon to perform. When we take into consideration the circumstances which occur in the hunting-fields, more especially in a *wall or timber country*, it will be at once apparent how necessary it is that an animal should have free use of his knee-joints. It is of less moment in a *bank district*, as the style of jumping is different to that of the

other. We will suppose a case. A horse is brought for examination with a blemished knee; we find that the toe of the foot cannot be got near the elbow—perhaps not nearer than from four to six inches—unless much force is employed, and we are certain the stiffness is situated in the knee-joint. We have to take into consideration the fact of the horse being a *hunter*, and likely to be put to a high leap, either over stones or a timber fence, no matter which: the rider has no fear of the jump himself, as he has had frequent opportunities of testing the capabilities of his horse over all kinds of fences, *up to a certain height*. He puts him at a four-foot wall, or rail, believing the animal can do it safely (and so he could with the sound limb, but how fares it with the stiff one?). The horse is unable to flex the joint sufficiently—*an inch short is enough*—the result is an ugly *cropper*, which may possibly cause some serious injury to the rider—perhaps, even, break his neck—and all this produced by the defective action of the carpus. I remember a case which occurred many years ago. The late Lord W—— sent for me to examine some horses he had purchased; one was a hunter with a good character. His lordship said, "I am paying a large sum for this chestnut horse and I hope you will be very particular in your examination." I observed that the horse was blemished upon the near leg, and also upon the left eye. He said he didn't mind blemishes if they wouldn't interfere with the action or usefulness of the animal. Having explained the nature of the blemish upon the cornea, I came to the knee, when I discovered there was considerable stiffness, so much so that the foot could not be raised within six inches—or more—of the elbow-joint. I made a remark to his lordship, which caused him to extol the qualities of the horse, and say he had been told by several of his friends that the horse was highly accomplished. I knew the horse, and had met the owner out with hounds often upon this animal, but had upon no occasion observed him jump any fence besides banks, and what we call in Ireland, "*gaps*." It is seldom that post-and-rails or masoned-stone walls are met with in the country where this horse hunted. I inquired if his lordship was in the habit of going at a rail or stone-wall. He replied, "Oh yes." I then said the horse doubtless could negotiate every fence with

safety up to a certain height, but with his heavy weight—he ranked with the welters if the horse was tried at timber or wall—*if too high for the stiff knee,* he would be likely to come down. In order to make the case plain, I requested he would take hold of the foot and endeavour to touch the elbow with it; which he at once did, and failed, and looked surprised. "Now," said I "perhaps you will be kind enough to take the opposite foot and prove what you can do with that." He did so, and without the slightest effort knocked the foot against the elbow. He became conscious that there was something wrong, and turning round to the head groom, ordered him to place knee-caps upon the horse, and take him back to his owner. I have been rather prosy on this subject, as I feel assured I could date some serious accidents to the cause named. I have not the slightest doubt that many men have had spills over timber and walls, and no suspicion of the animals ridden having defective knee-joints.

(To be continued.)

CAMELINE PATHOLOGY.

BY ALFRED J. HASLAM, M.R.C.V.S., A.V.D., SUAKIN.

DURING the Suakin Expedition there was a large camel depot at Suez, situated about four miles from the docks. On the 27th June, 1885, I had spent a busy morning at the docks, and on arriving at the Desert Camel Camp about 1 p.m., saw many camels dead and dying.

Symptoms.—A difficult and painful gait, slowly moving, sometimes "tottering," shifting slowly of the feet; lying down, quietly rolling on to side, and occasionally bending back the head, oftener the head seeking the flanks; an uneasy, helpless look of the eye—to an unprofessional observer an aspect of simple general uneasiness and weakness; no violence of any kind. Frequent weak and full pulse; great tympanitis; laboured breathing; drawn-up flanks; gradual exhaustion; ultimately stoppage of pulsation and respiration, and death in from six to eight hours after their last meal. Fifty-six of the dead ones lay on their left side.

Treatment.—Those slight cases not already dead were treated

successfully by rumenotomy; very gentle exercise; every two hours a pint of warm water as a drench, and feeding on warm bran-mash (I fear the annual grant to the Army Veterinary Department does not allow of Tinct. Opii. for "gommells").

Post-Mortem.—The number of camels that died was sixty-four. Every one of these I examined *post-mortem*, and found the following:—

Diffuse inflammation of alimentary canal from cardiac orifice of stomach to anus; diffuse peritonitis; paralysis of digestion and bowels; stomach full of *unchanged* food and water, with a great quantity of gas, chiefly carbon-dioxide. The examinations commenced in some cases immediately respiration ceased, and in every case were found the above-mentioned lesions. The brain and spinal cord presented nothing unusual. In nearly all cases, but especially in about forty, the heart had undergone semi or total mucoid degeneration (the right side generally, sometimes even the left ventricle was attacked). There was a case of fatty degeneration of the heart, and two cases of rupture of the right auricle.

All but twenty-seven were in poor condition. Some cases that had only been disembarked from ship the day previous, were suffering from Pneumonia, but scarcely sufficient to have caused death at that time.

History and Pathology.—Importance of careful inquiry. For the thorough apprehension of this enzoötic, I must divide the dead camels into two divisions.

Division I.—Numbering twenty-one. Composed of camels that were disembarked the day before (26th June, 1885), along with others, and which were embarked at Suakin on 20th June, 1885, hence six days in a very confined space—not even allowing a natural standing posture—as examination of the ship "hold" proved. These camels are said to have been regularly watered on board ship, but as they only obtained condensed water, they drank very little, and on some days none. These camels were in fairly good condition, but were nevertheless weak, as one can well imagine, after their confinement. They were also suffering from slight Scabies. For the night following their disembarkation, these camels stood near Suez docks, being "first

watered." Next morning they were fed on chopped straw and barley at 7.30 to 9 a.m., and as stated at a board of inquiry, "watered earlier than usual after feeding." In fact, they watered as they passed the trough on their journey to the desert, and as the journey commenced before 10 a.m., they were watered *within* two hours (at the outside) after a "hearty and plentiful breakfast."

The *custom* and *order* for all camels is:—"Feed at 6 to 7 a.m., and water at 4 or 5 p.m, feeding again at 6 p.m.," but as this was the first time camels had been sent to the desert in the forenoon, they were watered "as *usual* at starting," and harm resulted, which on former occasions it did not, because the time of starting was near to "watering" time. The day was hotter than usual, being about 130° F. in the open (but not hotter than certain other days, as proved by the only two thermometer registers kept at Suez, upon which nothing unusual occurred at the camel camp, moreover, it was only three degrees higher than the day before. Likewise it is often 150° F. at Wady Halfa, where no such disaster has occurred). About 12 (noon) a camel fell, dying on the road, and then another, and at 1 p.m. on arrival at the camp these exhausted camels commenced to die after their sudden exertion.

Now all these deaths (twenty-one) occurred in from sixteen to twenty-four hours after disembarkation; they were in an unexercised, weak state; in almost every case the heart had degenerated: they had walked the four miles in the hottest portion of the hot day. Some had Pneumonia. But a great law of health, for the camel as for the horse, had been violated, *i.e.*, drinking to fulness almost immediately after a hearty meal; moreover, after six days of condensed water, and when one would expect them to drink more than usual.

The above then, combined, is the ætiology of Division I., and this opinion is supported by *post-mortem* examination. Death took place more by shock (syncope) and exhaustion than by the inflammatory state; which latter, however, completed the work in those few cases unaccomplished by the former. Little could a heart of jelly perform the extra labour entailed by such hyperamic inflammation and sudden exercise.

Division II.—In number: Forty-three, forming *part* of the desert camp.

Composed thus (fed from 6.30 to 8.30). 26: *Most* of them had arrived at the camp the day before (26th June), and disembarked the day before that (25th June), all suffering from Scabies. The rest were composed of the very weakest and most severely scabied of the camp camels. 12: suffering from severe wounds, Dermatitis, Fever, etc., unexercised. 5: strong camels—very slightly scabied—in *the* one of these "5," examined before death—the pulse was strong.

This division of forty-three were all more or less scabied, and the group "26" were, as a rule, severely affected.

Now the ignorant "natives" (not Bedouin Arabs) taking care of these camels, feeling the unusual heat of the day, thought to give some camels a "treat," by watering them in the morning—the "headman" told me *so* himself—and this was actually seen going on by Europeans in the case of the "12" or "sick" group of the Division II. Likewise a "Khamsin" wind commenced to blow in the morning, for which reason, also, the "natives" watered the camels earlier than usual. But, more than all, owing to the "rotten" state of the camel head-collars, and in *many* cases, absence of head-collars altogether (the camels were about to be sold, and no head-collars were supplied), the camels broke loose, and drank to fulness at the "watering-place," twenty yards distant. In fact, for a time, the camp was confusion—the human beings seeking shelter from the sand-storm, and the camels seeking water.

The "5" group of this Division II. broke loose, and were seen "gorging" themselves at the fresh water canal to which they were nearest, and then to become embedded in the mud, struggling in which only brought on exhaustion the sooner. Likewise many of the "26" group were seen loose, the heat encouraging thirst—the natives being under shelter, and the camels doing as they pleased, and the majority only two days off ship. The rest of group "26" had not been long at the camp, and were the weakest and most severely scabied of all the camels.

Speaking generally of both divisions, the *post-mortem* lesions

were exactly the same, and it is to all circumstances combined, as explained in Division I., that death resulted; but I am of opinion that had the camels been kept from water until their proper time, and then allowed it in moderation, such a great preventable catastrophe would not have happened, as proved in the case of the rest of the camel camp, and at other times in similar circumstances. Again, no doubt, the unexercised state and morbid hearts assisted materially to bring about death. Yet it is a fact that *ad libitum* watering immediately after a large meal in this climate, will cause Enteritis, Peritonitis, and death in otherwise healthy camels. One person suggested "poisoning" as the evil doer. Another, while I was carefully washing some scratches on my hand, solemnly assured me it was Anthrax—he had seen cattle go off suddenly in India just the same way. I rushed to my microscope to see if I should "go off suddenly," and having found no bacillus anthracis in the blood of intestine or heart, began to think, with the result that I had a good subject for communication. Some persons at the station, men of camel experience, said the camels died of sunstroke! ! ! and stated their opinion to the Board of Inquiry. *Post-mortem* told the true tale, however.

In conclusion, and bearing slightly on the above, I cannot help stating here, how different camels would be if they were only treated more as we treat horses, instead of like pigs. They are grand animals, they call forth my admiration and sympathy, and in spite of their ungainliness and often sullen behaviour, they make me a willing pleader in their cause. But their patience and endurance of the harsh and cruel treatment they often meet with, excites wonder. As does the fact of their suffering from painful Peritonitis, Enteritis, Pleuritis, Colic, or Pneumonia, without showing the least violence, and even without a groan, demand the further philosophical investigation of temperament and pain.

SPLENIC FEVER.

BY H. LEENEY, M.R.C.V.S., EAST GRINSTEAD, SUSSEX.

THE prevalence of Anthrax in the northern part of Sussex has been, for generations, a great source of loss to stock-owners;

and the total inability of veterinary practitioners to cope with it has led farmers to regard it as one of the inevitable drawbacks of the soil, and while some adhere to the practice of setoning and bleeding, or physicking, all are agreed that treatment is of no avail when once cattle are "struck." That form of Anthrax which is most frequently met with on reclaimed forest land is what is known in the district as the "Pook," or "Struck," or "struck with the Pook," and almost always attacks thriving young animals, from one to two years old. It does not always affect the hind extremities, or any limb, though this is most frequent; and an emphysematous skin enables the stockman to diagnose it. It happens frequently that there are no outward or visible signs of illness beyond dulness and positive refusal to rise; but in other cases there is lameness, the message sent to the veterinary surgeon being often to the effect that a young heifer has been "romped," or is lame from some other supposed cause, and on arrival the beast is found to be down, the respiration increased, and the temperature 104° to 106°. When no other special diagnostic symptoms are present, the practitioner can invariably be guided by the "muddled" heart-sound—I cannot use another word so expressive, though more scientific nomenclature might be found. It is as though the heart were fluttering in a great quantity of pericardiai fluid, such as is sometimes heard when a piece of fencing wire or nail has found its way into the chest. Some few cases have presented all the features of Acute Pneumonia, and *post-mortem* examination has shown the lung structure black and broken up, like the spleen, and containing the characteristic bacilli in great abundance. Whatever special symptoms cases present, the end is the same, and that in a few hours—usually less than twelve, and rarely more than thirty hours from the time the beast is first observed to be amiss. It has usually been held by the farmers of this district that the "Pook" never affects lean, unthrifty, store stock or milch cows; but careful inquiry over a large district proves that the statement is not wholly correct, but that a larger number of fast-thriving youngsters fall victims to it than less favoured or older animals.

A recent outbreak of Splenic Fever among shorthorn cows

induces me to believe that, in the foregoing form, it has been often mistaken for something else, and hence the general opinion that cows cannot have it.

On September 28th I was called to Imberhorne Manor Farm, which is one of the best-managed in Sussex, having every possible convenience and comfort for the keeping and rearing of stock, no money or talent having been spared in the construction and management of the buildings, drainage, water-supply, etc., etc. My patient, a shorthorn cow, had fallen off her milk that morning, and arched her back a little; which symptoms would not, perhaps, have attracted much attention only that one of the herd had been found dead a few days before. Examination showed nothing but an increased temperature (104·3°), and I promised to see her again in the evening. At 6 p.m. a messenger came to say she had fallen in a fit, and on my arrival she was dying. The cowman had been milking her, and he stated that she had given something like her usual quantity of milk, and seemed quite well again, till all at once she began to tremble, and he could only just get away in time to save her falling on him. A few minutes before she died, a quantity of bloody matter was voided *per rectum*, and *post-mortem* examination showed the spleen quite disintegrated; the microscope revealed the presence of the characteristic bacilli in large numbers. On the 29th the whole herd were bled and physicked, and stall-fed instead of being turned out during the day. No further cases occurred till October 7th, when three cows were observed showing the same symptoms: "Violet," with a temperature of 105·5°, and the characteristic heart-sounds; "Bumblehorn" wore an excited, anxious look, but only indicated 102·5° *per rectum;* and "Lily" was off her feed. "Violet" was set apart as a probably fatal case; "Bumblehorn" ranked doubtful; and "Lily" had a cordial dose. On the morning of the 30th "Bumblehorn" was down and dying, "Lily" was apparently well, and "Violet" *chewing her cud, and giving her usual quantity of milk, with a temperature of* 106·3°.

At this stage Mr. Stock, M.R.C.V.S., of Lewes, was called in consultation (October 9th), but was unable to arrive at a ver-

dict, as he had not seen a *post-mortem* examination, and the removal of the suspects to a shed erected for the purpose had caused them to take cold, and during the time he was examining them they were coughing in such a suspicious manner that he wisely withheld his opinion. Thinking it impossible for "Violet" to survive another twenty-four hours, it was arranged for Mr. Stock to come to the autopsy, which he had the opportunity of doing next day, as the cow died about 10 a.m., being about seventy-five hours from the time she was first observed to be uneasy.

The *post-mortem* examination satisfied Mr. Stock that it was genuine Splenic Fever, and by his advice the cows were put on bran and hay obtained from a distance. On October 8th, another cow, "Imberhorne Duchess," was separated, as she had suddenly fallen off her milk and was coughing. On the 10th her temperature rose to 104°, but she was giving her milk, "cudding," and looking well. 9th as on the 8th. 10th, temperature 106°; respiration 66, and symptoms of Acute Pneumonia. Blistered the sides, gave aconite and opium, and on the morning of the 11th the respirations were down to 45, and temperature 103°, since which time she has become quite well.

By post I send a specimen of splenic blood, mounted by Dr. P. E. Wallis. The *Bacillus anthracis* are few in number, but large, and the specimen is not so good as could be wished, as the bit of spleen had to be put in spirit, and was thereby too much hardened, pending an opportunity to make a section. This specimen was taken from "Violet," and I have observed that the bacilli are greater in number in proportion as the disease is rapidly fatal, the small number but large size in this specimen going to prove my observation.

The herd in question being of great value, I had thoughts of protective inoculation, and my client obtained from M. Pasteur a quantity of the first and second cultivations; but it was eventually decided, after Professor Axe had kindly given me the benefit of his advice, not to do it, and the cows have since had daily doses of hyposulphites, and no fresh cases occurred. I have looked in vain for some English veterinary surgeon's account of inoculation with attenuated virus, but without satis-

factory accounts from some one well up in the stirrups. A country practitioner can scarcely afford to make victims, at his client's expense, to demonstrate the practicability or otherwise of Pasteur's cultivations when applied to the prevention of such forms of Anthrax as we get here. In Pasteur's own pamphlet a great many precautions are recommended ; and if my reading is correct, an animal may die with the second inoculation if the first is not satisfactorily performed ; or, indeed, if it *is*, but does not "take" :—

"Quand on agit avec trop de prècipitation parce qu'on est pressé par le temps et par le grand nombre a vacciner, il peut arriver, sans qu'on le remarque que l'acquille traverse la peau, et le liquide vaccinal est rejeté au dehors. Il peut se faire surtout qu'on néglige de relever le curseur, et que, en poussant le piston, il n'entre pas du tout de liquide vaccinal sous le peau. Dans ces circonstances, s'il s'àgit de la premiere inoculation préventive, comme le premier vaccin n'a pas été introduit dans l'économie, le second vaccin, plus actif, peut provoquer la mort.

"Le vaccin ne préserve pas les sujets en puissance du mal, il hâte même la mort chez certains d'entre eux."

My client (E. Blount, Esq., C.B.) has set apart a two-year-old steer, which I yesterday inoculated with the *premier vaccin*, and if further observations in connection with him are worth recording, they shall follow, unless such experiments come within the meaning of the Vivisection Act.

The foregoing account may not throw any new light on the subject of Anthrax, but will be the means of much good if it induces some abler pen to give us the results of protective inoculation carried out in England.

SUPPOSED CASE OF EQUINE VARIOLA.

BY T. MARRIOTT, M.R.C.V.S., A.V.D., ALLAHABAD, INDIA.

July 9th, 1885.—White country-bred pony, 13 hands, 4 years old, admitted to the sick lines exhibiting the following symptoms : Temp. 103, pulse 55, respiration 20 and somewhat difficult (apparently arising from a sore throat); nose extended forward,

swelling around the larynx, and enlargement of the submaxillary lymphatic glands.

Treatment: Isolation; mustard to the throat; febrifuge medicine to be put in the drinking water; low diet.

July 12th.—Pulse, temp., and respiration unchanged. From both nostrils a slight discharge; soreness of the throat decreased, but still difficult breathing.

July 14th.—Lymphatic glands remain still enlarged. On examining the Schneiderian membrane it looked very much congested, giving the case the appearance of Scarlatina.

July 16th.—Pulse 60, temp. 102$\frac{2}{5}$°, respiration 20, and difficult, from obstruction of the nasal passages, caused by profuse thick discharge slightly tinged with blood. Upon examination, the nasal passages within range of vision were seen to be studded with elevations, some appearing as small congested specks of a deep red colour, others of a dull reddish-brown hue, and a few that had passed these stages presented small circumscribed depressions (with healthy granulations), caused by sloughing of the elevated mucous membrane. The pustular stage was very imperfectly marked.

July 18th.—The only changes noticeable were in the sloughs, which had become confluent over almost the whole of the visible nasal passages, leaving a healthy granulating surface, and the appearance of an eruption around the mouth, nostrils, scrotum, sheath, and arms. The vesicular and pustular stages were rather better marked than they were in the nostrils. Animal feeding a little better.

July 21st.—Formation of scabs on the site of the pustules.

July 24th.—A few of the scabs disappearing, leaving typical pit-like depressions, which remain clearly defined, but concomitant with the cessation of the symptoms of Variola, the submaxillary lymphatic glands which remained enlarged throughout now commenced to enlarge still more; applied bran poultice.

July 27th.—Remaining scabs have disappeared, leaving most typical pits; the submaxillary lymphatic glands are increased in size and contain pus. An incision was made and the pus escaped. Animal feeding a little better, but very much emaciated. Give vegetable tonics.

August 3rd.—Other small abscesses commencing to form over the parotid gland and base of the ear.

August 6th.—Abscesses lanced; others appearing along the chain of the cervical lymphatic glands.

August 9th —These abscesses came to a point and were lanced; no more appearing; animal improving in condition. Continue vegetable tonics.

August 28th.—Discharged cured. The pit-like depressions remaining distinctly marked, especially upon the scrotum and sheath.

I may also add that Canine Variola is frequently seen here, the pustular stage being exceptionally well-marked.

DISLOCATION OF THE PATELLA.

BY H. TWEEDLEY, M.R.C.V.S., GLASGOW.

A QUESTION, on which the substance of the following essay depends, must be here promulgated, viz., Does luxation of the patella really take place, as it is commonly conjectured? Doubtless this question will excite astonishment, when the large number of cases described under the title are considered, and also when we consider how numerous are such cases which every practitioner believes he has met with in the course of his experience. But in spite of the large number of observations and facts, extending over a considerable period of time, the true nature of this accident, which is, moreover, pretty common, has been quite overlooked, and we have been entirely mistaken with regard to the real nature of the accident.

It is rather singular that this error has existed so long, and especially that anatomists have not rectified such a persistent error of practice.

To M. Chuchu, in France, belongs the merit of having abolished this error, and proving by anatomy the impossibility of the accident, which is considered as a dislocation of the patella, being a true dislocation, and giving the anatomical explanation of what it really is.

When the symptoms, considered as the expression of dislocation of the patella, are manifested, it has been conceded that they

depended on the displacement of the patella beyond its gliding pulley on the external side; the great height of the internal edge of the pulley dispelling the idea of the possibility of dislocation occurring in that direction. Being given this manner of conceiving the mechanical condition of what was believed to be luxation of the patella, the manœuvres to replace the patella have been conformable to this interpretation. Its displacement has been considered cognizable by a certain relief or protuberance which is in reality formed when the accident occurs. This relief—we have perceived it by the hand, and as, by a methodical pressure we succeed in causing its disappearance, and after its disappearance everything returns to order, the animal regaining complete freedom of motion; from this we have concluded that we have replaced the patella in its trochlear groove, from which it had departed by deviating outwardly. There is no truth in this judgment; but a pure illusion which must now be completely rejected, thanks to the explanations which M. Chuchu, inspired by his anatomical knowledge, has given concerning the nature of this reputed patellar luxation.

Anatomically, this luxation is impossible under the conditions in which practice admits of its existence, that is to say, with the ligamentous apparatus maintaining the patella in its relation with the femoral surface still intact.

There is no doubt that the adaptation between the gliding surface of the patella and the femoral pulley appears imperfect, when we only consider the bones deprived of their accessory appendages. But it must be remembered that the patella is completed on the internal side by a cartilage of prolongation which enlarges its gliding surface, and singularly consolidates it in its relations with the femur, by constituting a sort of pulley, in the groove of which the internal border of the femoral trochlea is enclosed, whence results a reciprocal reception of elevations and depressions of the two connected surfaces. The relief which the patella presents on the middle of its gliding surface being received into the groove of the femoral pulley, and on the other side, the internal border of this pulley, so prominent relative to the external, being enclosed in the groove of the pulley, which the internal complementary cartilage forms with the patella. Let

it be further remembered that strong connections resulting from this reciprocal interlocking, are very solidly maintained by the femoro-patellar capsule, strengthened, at its lateral parts, by ligamentous fasciculi wide and strong enough to be considered as special ligaments—which attach the patella on each side to the eccentric sides of the femoral condyles. Under such conditions of coaptation of surfaces, and solidity of attachment of the patella with the femur, its displacement outwardly is absolutely impossible, unless there is complete rupture of the internal strengthening fasciculus of the articular capsule. Now it is quite evident that in the case in which the symptoms of so-called dislocation of patella are manifested, this rupture does not exist, as, once the condition which has called forth these symptoms has disappeared, everything returns to its former order; the animal regains such liberty and regularity of action, that the existence of such a grave and painful lesion as that of rupture of an important articular ligament, could not be admitted.

It is evident, then, from these anatomical considerations, that the accident considered in practice as dislocation of the patella, is not a dislocation. The question now arises, What is it? Here again M. Chuchu, enlightened by anatomy, gives a completely satisfactory interpretation of the phenomenon, for it shows us the reality under the illusion.

In order to understand what really happens in cases where the patella appears dislocated externally, it is necessary to describe an anatomical disposition of the femoral and patellar surfaces, which appears to have escaped the attention of anatomists, for their works make no mention of it.

On the superior margin of the femoral trochlea, nearer the external than the internal lip of the pulley, exists a deep fossa, in which the trochlear groove terminates. The curve of the femoral pulley is, besides, not uniformly continuous, following the same radius to its superior margin. At about half-an-inch from this limit, the curve suddenly changes its direction and affects a straight disposition, constituting a sort of oblique plane separated from the curved surface by a well-marked stay or protuberance, which may be considered as the summit of an angle formed by the two parts of the trochlear surface at their point of meeting.

The same disposition occurs on the gliding surface of the patella, towards its inferior margin. There also the curve of the surface changes its direction, and instead of being continued, the surface of the patella, like that of the femoral trochlea above, affects a straight disposition, which adapts itself to that of the trochlea, and corresponds to it, at the moment of extreme tension of the leg on the thigh. It is to these anatomical dispositions, that so called dislocation of the patella is due. This pretended dislocation is nothing more than a temporary arrest of the patella on the superior entablature of the femoral pulley, an arrest which contributes in maintaining the fitting in, in the deep fossa of the superior border of the femoral trochlea, of a sort of prominent angle, by which the median elevation of the patellar surface is terminated towards its inferior border. As this depression, in which, so to speak, the patella is accidentally hooked, is nearer the external than the internal lip of the pulley, we thus find the explanation of the protuberance which the bone forms under the skin when in this situation, and also how this symptom has given rise to the idea of a veritable displacement. That is then the real interpretation of the phenomenon, and as a proof that this is the true interpretation, we can, on an anatomical specimen, place the patella under these conditions which prevent the flexion of the femoro-tibial articulation. To accomplish this, all that is necessary, is to allow the articular surfaces to become dry, and in this state we can place the patella on the superior entablature of the femoral pulley, where it is maintained so firmly that great difficulty is experienced in flexing the articulation.

Those are the mechanical conditions of this accident. It now remains to harmonise with these the etiological circumstances, in which we see produced what we will continue to call dislocation of patella; for this name, though it implies an error, may be maintained, provided its proper signification be understood. Since patellar dislocation is nothing but the result of a temporary arrest of the patella on the superior plane of the femoral trochlea, it would seem that this accident ought to have for its usual cause the energetic contraction of the pre-crural muscles, which, acting very powerfully on the patella, cause it to exceed

the line of demarcation between the curved surface of the trochlea and the plane surface which continues and terminates it superiorly. This is, however, not the rule; dislocation is often produced in adult or aged animals, at the period of convalescence from serious diseases, such as Influenza, Pneumonia, etc.

It is also observed on young, untrained horses, when they are submitted to rather hard labour. What happens in these conditions? Is it not, in the case of convalescent horses, that the considerable fatty pad or cushion, which is under the patella, behind the three patellar ligaments, is reduced in volume in consequence of the emaciation caused by the disease, and thus the field of movement from below to above of the patella on the trochlea, is increased proportionately to the reduction of the cushion, which would permit the inferior patellar ligaments to be stretched in all their length under the traction of the patellar muscles. The fatty cushion subjacent to the patellar ligaments no longer elevating, these so as to cause them to describe a curve, the effect produced would be the same as if the ligaments were lengthened to a degree sufficient to enable the patella to fix itself on the entablement of its trochlea, and momentarily be maintained there. No doubt, also, in the descent of the patella, a certain *rôle* belongs to a sort of spring action, represented by the elasticity of the compressed cushion, and this is wanting in those cases.

Such is the explanation propounded by M. Chuchu, of the predisposition to patellar dislocations, caused by emaciation resulting from grave diseases. As is seen, everything becomes clear in this question of pretended dislocation of patella, from the light of anatomy, and the interpretation which it inspires.

If general weakness, proceeding from the youth of the subject, or as a consequence of disease, constitutes frequently the etiological condition of dislocation of patella, it often occurs under entirely opposite conditions; that is to say, on energetic subjects, either during progression or when violent efforts are made to disengage a posterior limb, confined either accidentally or otherwise. In these cases, the energetic contractions of the patellar muscles draws the patella to the extreme limit of its

field of gliding, and seats it on the entablement of the superior border of the pulley, where it is maintained by a sort of spasmodic state of the crural muscles, whose intensity of contraction is in proportion to the pain and inconvenience which the immobility of the limb determines. It is under these conditions that reduction presents most difficulty; for in order to obtain this we must overcome the resistance which the crural muscles oppose to any attempt made to replace the patella in its normal position.

Veterinarians formerly gave the name of "cramp" to what their successors had the pretension to denominate more scientifically "dislocation of patella." German and Italian authors have preserved this name (Kramm or Krampf, Grauchia, Crampo), and even before M. Chuchu had recognised and described its cause*; but to M. Chuchu belongs the honour of its anatomical demonstration, which is, besides, more complete and precise than other veterinarians. However, M. Bassi, of Turin, has called attention to an important point, which appears to have escaped M. Chuchu. When the patella has crossed the relief which above terminates the internal lip of the femoral trochlea, it remains fixed not only in consequence of the anatomical disposition of the parts, but also because the tension of the tibio-patellar ligaments, already considerable, must still increase when the patella turns round the most prominent part to regain its normal position. This is important from a surgical point of view, as it may sometimes be necessary to cut the internal tibio-patellar ligament, the extreme tension of which is the principal obstacle opposing the return of the patella to its normal position.

I will here relate a case which occurred in my own experience about a year ago, tending to confirm the statements of M. Chuchu in several points.

The subject was a light van horse, belonging to a "Baking Company" in Glasgow. At the time of sale he was suffering from a slight cold, and a few days after delivery I was called upon to treat him. I found him slightly fevered, and with a

* Meyer, in *Magazin de Gurlt et Hertwig*, 1852. Bassi, in *Medico veterinaris*, Turin, 1872-1875.

rather copious discharge from both nostrils; after a few days treatment he improved greatly, and I was asked to examine and give an opinion about him. On being brought out of the stable and proceeding a few yards, he suddenly seemed to lose complete power over the near hind limb, dragging it as if it were all of a piece, with the front of the wall of the hoof rubbing along the ground, and the sole of the foot turned up. On proceeding a few steps in this manner, he as suddenly regained command over the limb, and proceeded as if nothing had happened. I was at a loss to conceive what had occurred, and had the animal exercised for a considerable time in the walk, trot, backing, and turning, but could not discover the slightest trace of lameness or inconvenience in movement. I had him placed in the stable, and informed the foreman what had occurred, at the same time advising him to return the horse, as I considered he had probably suffered from a previous dislocation of the patella. As I was attending another animal in the same stable, I did not fail to have the suspected animal walked out daily, in order to discover a renewal of the symptoms I had previously observed. Nothing occurred for two days, but on the third day, after walking a few yards from the stable, I observed the symptoms I had previously noticed, but with one notable exception—the symptoms were on the opposite limb, the off—previously they were manifested on the near leg. He, however, very quickly recovered, and was walked and trotted, but the symptoms were not repeated. A few days after he was returned to the dealer, and I heard no more of him. Remarks on this case would be superfluous, after the clear explanations given above; but I may say the case tends to corroborate M. Chuchu's statements with regard to the state of the fatty cushion, or if this be incorrect, there is a predisposing cause in the state of the stifle which yet remains to be explained. The age of the animal in the case quoted was five years, and he was low in condition.

As regards the symptoms, treatment, etc., I will be very brief; as these, after the explanations already given, are of less importance, and I will simply make a few remarks which appear to confirm the explanations already given. The topical characters

of dislocation of patella are not so apparent as the physiological symptoms. To the eye, there is very slight deformity of the region; on manipulating, there is perceived the little prominent relief that the patella forms by being fixed in the femoral groove, and this relief is nearer the external than the internal lip of the trochlea. This prominence has given rise to the belief in a displacement of the patella outside its trochlear groove, a displacement which is impossible with the conditions of coaptation and attachment of this bone with the femur. As the patella has ascended very high, and is momentarily fixed above its gliding surface on the kind of plane which surmounts it, the subcutaneous relief does not occupy its normal situation; it is more elevated, and at the part where, normally, it is perceived by the touch, there exists a depression which has strengthened the idea of a luxation, and all the more readily as we had so prejudged.

In fact, the normal place of the patella in front of the femoral pulley is actually empty, and the bone forming a protuberance outwardly at a more elevated part, all seemed to indicate the reality of a luxation. But no reflection had been made on the inconsistency between this relief, admitted so easily, implying necessarily ligamentous rupture, with their persistent lesions; and the rapidity with which all these symptoms disappear at a given moment, without the animal appearing to have the least consciousness—from the double point of view of local sensibility and freedom of movement—of the accident, the symptoms of which were just before so marked. Such an instantaneous return of locomotary fitness, after such complete hindrance, was evidently incompatible with the gravity of material alterations, implying complete or incomplete luxation of the patella; for classical divisions admitted of described degrees of the accident, each with its proper symptoms, seen by the eye of the mind, which gave faith to that of the body. It is this faith, inspired with an erroneous conception respecting the nature of patellar luxation, that has caused the persistency of the belief in its reality. Another characteristic of patellar luxation is its short duration, which implies that it only depends on transient causes.

As to treatment, there is little to be said: all are acquainted with the methods resorted to in replacing the patella. Here, also, the success of the treatment supports the idea of the true relation of the patella which I have given above. If it is true that luxation of the patella is related to a state of weakness of the subject, either on account of youth and fatigue in training, or in consequence of emaciation caused by disease, the indications are to recur to good diet and careful exercise, which strengthen and improve the body. Indeed, it is commonly observed that it ceases being produced on young or convalescent horses, as, under the influence of these conditions, their strength increases.

Is not the part attributed by M. Chuchu to the decrease in volume of the articular fatty cushion, confirmed by the result of practice? From this point of view, alcoholic and other applications may be useful by stimulating local nutrition, and hastening the repair of the fatty cushion. Dislocation of the patella admits then, properly speaking, of preventive treatment.

I will say little with regard to the methods of operating in reduction of patellar luxation, except that—as arises from the explanations already given—traction on the bone should take place, not from without to within, as would be done if we maintained the idea that luxation had happened externally, but from above to below, in order to replace the patella in its normal position. Reduction often takes place spontaneously, either by giving the animal a sharp cut with the whip, or even by backing him, at the same time causing him to place the plantar surface of the foot on the ground.

Reduction being effected, now that the true nature of the accident is determined, should the irritating applications commonly applied, be now considered essential? This practice—which would be considered rational if the reality of the luxation were admitted, on account of the too great laxity of the means of attachment—must it still be preserved? At first sight it would seem that this indication does not exist, since the patella is not susceptible of being displaced outwardly, and the so-called dislocation is nothing but its too great ascent above the gliding surface, and its arrest on the oblique plane, by which this sur-

face is terminated superiorly. But it must be considered that when the patella occupies this position, it is brought by the very fact of the disposition of the femoral groove, and that of the plane on which it is fixed, towards the external side of the articulation, where it forms the protuberance which has given rise to the idea of luxation ; and it must be admitted that if, on this side, it encountered greater rigidity of the articular walls, their resistance might oppose to a certain extent its excessive elevation on the gliding surface. It may, then, be beneficial to apply the usual blistering, or other applications, after reduction is effected, to prevent the return of the accident.

It is probable, also, that these applications, by the pain which they cause, prevent the too energetic contractions of the crural muscles, and thus lessen the influence of the chief factor in the production of the accident.

But if these practices are indicated, and act beneficially, is such the case with setons placed along the stifle, medicated with various preparations, and allowed to remain for ten or twelve days? May not this counteract the end in view by causing absorption of the fatty cushion, that is to say, realising one of the principal conditions which favour the increased ascent of the patella? To this it may doubtless be answered, that the application of setons has been efficacious in this sense, that afterwards luxation has not been reproduced.

But that is not a proof of real efficacy, since experience testifies the fact of many cures without any topical applications.

However, the seton by its mode of action does not seem appropriate now, at least, when the nature of this accident seems well established.

Since reading the above essay, I have had an opportunity of verifying, by *post-mortem* examination, the facts therein propounded. The subject was a thoroughbred horse named Strathdon, and while engaged in galloping prior to running in a race, and being at full speed, suddenly fell very lame. On his rider dismounting, he found the animal very lame, and, indeed, scarcely able to walk ; with difficulty he was brought home, and three days after I saw him, when he presented the evident symptoms of luxation of the patella. All attempts to replace

the bone in its position were ineffectual, and as in other two days he was in a pitiable condition, I killed him, and on making a *post-mortem* examination found the patella fixed exactly as described above; and even on the dead subject it was impossible to replace the patella, owing to the extreme contraction of the muscles. The whole articulation was quite immovable.

A SIMPLE AND EFFECTIVE METHOD OF TYING DOGS.

BY GEO. KINNELL, ASSISTANT TO D. MENZIES, VETERINARY SURGEON, ST. AUSTELL, CORNWALL.

WHEN operating on a dog a short time ago, I hit upon an effectual and easy method of securing the legs of my subject.

In this instance, the legs were tied by means of two towels knotted together; but what I have since used, and find more convenient, is an ordinary stable bandage.

The length required for securing a large Spaniel dog is about nine feet.

The mode of procedure is as follows:—

1*st. Step.*—Pass the bandage underneath the body, and place it so that the middle part rests against the fore legs just behind the knees. Next, carry the halves upward and cross them over the back of the neck, at the same time pull them tight and twist them once round each other. By this means the legs are drawn up and kept with the knees close against the throat.

2nd. Step.—Pass the two parts of the bandage backwards and downwards, one on each side of the body, carry each round the hind leg of its respective side immediately above the hock, bringing them between the legs from behind forward. Lastly, carry the ends straight up and to the outside of the part running down from the neck, pull them tight, and tie them firmly over the loins.

The body is thus drawn into a crouching attitude, and the animal rendered incapable of executing any but the slightest movements.

In applying the bandage, it is necessary to pull the fore legs close up against the throat, to put down firmly the twist at the

back of the neck, and not to allow it to get relaxed while the second step is being carried out. With a quiet subject, tact, and a little assistance, the bandage can easily be put on in a minute.

I think this mode of tying might conveniently be employed in many operations (particularly in castration), during the administration of chloroform until the animal is under its influence, and in giving medicines.

GLANDERS-FARCY IN NATAL, SOUTH AFRICA.

BY S. WILTSHIRE, M.R.C.V.S., COLONIAL VETERINARY SURGEON.

A RECENT outbreak of Glanders-Farcy in this colony has led me to jot down my experiences of this disease and a few observations on the causes which may influence its development in the mildest forms. If this paper is considered worth publishing, I trust it will induce those well acquainted with this disease to give their views upon the subject, for the benefit of the profession in general, and those members in particular who rarely see cases, and are not cognisant of the occult characters it assumes, as well as to correct any errors of my own.

On my return from England, in March last year, I found one of the horses of the Mounted Police isolated by my *locum tenens*, Mr. Duck, A.V.D., when I visited the barracks the morning after my arrival. This horse and another one had lately come from a station in a distant part of the colony to headquarters, and as one of them had a discharge from the nostrils, and Mr. Duck was suspicious of it, he directed them both to be kept separate from the other horses. I at once recognised the disease, and as ulcers rapidly developed on the nasal membrane within the next day or two, I asked Mr. Duck to come and see him and give a certificate, as I did not formally resume my duties until the 1st of April, and he was still nominally in charge, though I had practically relieved him.

In a few days the other horse showed symptoms which rapidly developed, and he was accordingly destroyed, as his fellow was.

On inquiring of the troopers who had brought in the horses as to the rest of the detachment, they stated that several of the horses had had sores about them, and I at once told the Commandant that I felt doubtful about them, and it would be a good thing to ask the Inspector in charge to report as to their state. This was done, and in his reply he said that, not feeling satisfied on account of these cases, he had asked some gentlemen in the neighbourhood to come and give him their opinions about them ; which they did, and said they thought the horses were surfeited, as they had a "breaking out" about them. On the receipt of this I at once said I felt sure that they had Glanders, and that the troop should be inspected.

Accordingly, on the day I resumed my duties—1st of April—I started on my journey, and three days later, on my arrival at the police camp, I inspected the troop and found six horses glandered, with several others showing suspicious appearances. The diseased ones I directed to be shot, which was done next morning, while the suspicious ones were carefully isolated.

Amongst the latter was a grey horse, to which I wish to draw particular attention. When I was examining the troop the Inspector said that he had had sores about him a short time before, but they were all well, and nothing was to be seen of them except in one place in the breast, just to the right of the cainiform cartilage, and between that and the point of the shoulder, where there was a corded absorbent vessel feeling like a piece of whipcord beneath the skin, and about an inch and a half in length. No other signs were visible, but I felt so suspicious of him that I was inclined to order him to be shot, though I decided to give him time. However, I requested the Inspector and his sergeant to keep a special watch on him, and if he showed any indications of sores, swellings, cough, discharge from the nostrils, or ulceration of the latter, to destroy him at once.

Amongst those that were isolated there were some that showed no decided indications of anything wrong; but which my experience of Glanders-Farcy, together with the attendant circumstances, led me to regard with suspicion. Ordinarily, these animals would not have attracted my attention, although a long

and intimate acquaintance with this disease in its varied and most occult forms, has, I think, rendered my perception more acute, and perhaps made me somewhat suspicious.

On my return from this inspection I met with eight cases more at different places along the road, two of which are deserving of attention. The first one was a fine young draught-stallion, which, a few days before, had taken a prize at an agricultural show at Kokstadt, in East Griqualand; he had a discoloured discharge from the nostrils, ulceration of the Schneiderian membrane, and slight enlargement of the submaxillary glands. Two other (post-cart) horses in the same stable, and in the same condition, were destroyed, but the owner determined to ignore my advice with regard to this one, and keep him on to see whether he would get better, and, six months later, when journeying that way again, I heard that he was working daily on a farm, and apparently quite well.

The second one was in another part of the country, and I had to stop at one of the stages, and ride twenty miles across country, with a sergeant and trooper of the mounted police, to see this animal. He was a stout, good-looking, cream-coloured gelding, formerly owned and ridden by General Butler during the Boer war. He had a nasty discharge from the nostrils, and the membrane was of a dull leaden colour; no enlargement of glands, nor sores; condition good. Standing next to him was a horse badly glandered, and one had died of the disease two days before. I advised the owner to destroy both these horses, as the law did not empower us to do so; but he refused, and a few days later on brought the cream-coloured one into town for Mr. Duck to examine, who said it was a very suspicious case, but, in the absence of visible ulceration of the nostrils, he declined to say that it was glandered. He asked, however, if it had been in contact with the disease, and the owner assured him that it had not, that he had no glandered animals on his place, and so on; thus suppressing the truth. On hearing of this, I called on Mr. Duck and told him of what I had seen, which justified me in declaring this horse glandered, notwithstanding the absence of visible ulceration of the nostrils. A few weeks afterwards this man took these two horses, that I condemned, right through

the colony to the Transvaal gold-fields; since which I have heard nothing more about them.

After reporting to the Government the result of my inspection, the detachment of police was sent away from their station to the seaside for the winter—a distance of about sixty miles—where they stayed until September, when they returned to their quarters. In the meantime they had done no patrolling, and several of the horses I had directed to be kept under observation had developed the disease and been shot; but before recommencing patrolling, it was deemed advisable that I should inspect the troop, and accordingly, in the first week of October, I went down again. Unfortunately, three days before my arrival another case had been detected and destroyed, and on examination I found one other affected, and placed some more under observation. I very carefully examined the grey I referred to on my first visit, and, somewhat to my astonishment, could not find the slightest evidence of disease about him, and the Inspector said he seemed to keep in perfect health. I said I still felt confident that he had the disease in his system, and requested that he should be specially watched for any indications of it.

Nothing fresh occurred, and it was hoped that we had stamped out the disease; but before releasing the troop from quarantine, and recommencing patrolling, it was deemed advisable that I should go down and inspect it; and accordingly, on the 3rd of January of this year, I started, and three days later, on my arrival, I carefully examined every animal, but before proceeding far I discovered one with unmistakable signs of Glanders, which I then found was one I had requested should be watched on my last visit.

Several others presented suspicious appearances, the most conspicuous of which was my friend "the grey," who had a discharge from, and bad appearance of the nostrils, and a weak, bleary condition of the eyes—a common symptom in Chronic Glanders. The following day (Sunday) was a damp, miserable sort of day, with drizzling rain, and it was reported to me that he was breathing quickly. However, as I had no doubt about the cause, I adopted no treatment, as I had decided on recommending him to be destroyed with the others, after I had reported

to the Government; but I asked the Inspector to note his condition, and let me know, for my information.

Later on I was informed that, after I left, he steadily got worse, his breathing becoming very bad. There was ulceration of the Schneiderian membrane; the absorbents down one side of the neck, extending to the breast, were corded; he had considerable swelling down the insides of both fore legs, and he also became weak in the hind quarters; and, finally, was unable to rise, and had to be destroyed before orders were received from headquarters as to the disposal of the lot. No *post-mortem* examination was made.

On my return to town I reported the state of the detachment to the Government, and pointed out the difficulties in the way of dealing with the outbreak, the uncertainty as to how many—or whether all—of the horses were affected, and when they could be considered safe; and, as no mounted duty had been done for nine months, they were—and were likely to be—practically useless; besides which, they would always be looked upon with suspicion. The question, therefore, was whether it would not be safer and more economical to destroy the whole troop than keep a lot of horses, at considerable expense, which could not be used for duty, were dangerous to human life, and rendered the services of the men of no avail.

The Government considered my suggestion, and very wisely, as I think, ordered the destruction of the whole of the horses of the detachment, as well as the stables, and, after re-mounting the men, sent them to another part of the district, where they still remain. Of course, cleaning and disinfecting the stables, and other sanitary precautions, were taken after these inspections.

The question of Glanders-Farcy has been one of the most difficult and unpleasant with which I have had to deal in this country. It happened to be the first subject which the Government directed me to inquire into, as its existence was denied when I first came into the colony. Fortunately I met with a very well-marked case which I could not mistake, and when my report was published I was assailed in all directions by men who asserted—as some do still—that there was no such disease in the colony, that it was Nasal Gleet, and no end of nonsense of a like

character. Very soon, however, I met with cases of Chronic Glanders, where there was no ulceration of the nostrils visible, and which, of course, defied all attempts at cure.

One case in particular I had under observation for over a year before I finally condemned it; after which it was sold by the unscrupulous owner, and infected two valuable carriage-horses worth £120, which led to a lawsuit and the extension of the infection to other horses.

Later on I was requested to examine the horses running on one of the passenger lines to the seaport, a distance of about fifty-four miles. There were nine stations in all, including the two termini, and, including spare ones, about seventy horses. It was here that I gained experience of the different phases of the disease—from the most defined to the most occult—that has since proved so valuable to me. What first struck me was the large extent of the ulceration of the nostrils, where it was present, the dust and mucus forming large scabs over the ulcers; next, I noticed that in the greater number of cases the submaxillary glands were not enlarged, and those that were, were not fixed to the jaws.

Examining these horses as I did every month, I soon learned to value the condition of the nasal membrane, and remarked the dull reddened or streaked condition of it, indicating that the disease was in the system, though the stage of ulceration, or the appearance of Farcy buds had not been reached. I was particularly impressed with the white streaks and stellate patches in the nostrils of horses which afterwards proved glandered, as well as those in which the disease had grown milder, and the animals were supposed to have recovered from it; though, as far as I have been able to trace them, they have all ultimately succumbed to the disease. In a few instances I have met with pit-like depressions on the Schneiderian membrane, somewhat like pock-marks, but they were rare. In chronic cases, where no lesions of the disease are visible in the nostrils, I almost invariably note the weak, bleary condition of the eyes, specially in the inner canthus. In other cases—chiefly, as far as I can remember, preceding the development of Acute Farcy—the conjuctiva was of a yellowish tint. Cough was seldom

present; and I don't recollect any case where abnormal urination was observed.

One of the most interesting and instructive cases that it has been my lot to meet with came under my notice first in the early part of 1875. The animal, a young grey mare, was brought to me for examination one morning before breakfast. It had a nasty discharge from the nostrils, both of which were ulcerated, and there was enlargement of the sub-maxillary glands. The case was so well defined that it did not require a second look, and I advised the person who brought it to take it away and shoot it. Shortly afterwards I met the mayor of the town, who remarked that he had seen the horse being brought to me for examination, and that it was not right that an animal in such a bad state should be led along the streets. A few months afterwards I was going on an official visit to a distant part of the colony, and on the morning of the day I started one of the lawyers practising here came and asked me if I would attend the court and give evidence about this case, as there was a dispute about the sale of the mare previous to my examination. I declined, unless subpœnaed; and as that did not come before I was ready to start, I left, and heard no more about the matter, but concluded that the horse was destroyed or had died, and I thought no more about it.

Two years afterwards, a man came to me one morning, just as I was at breakfast, and said he had brought his horse to me for examination because his neighbour threatened to report him for allowing it to run loose and drink out of the stream which supplied his house with water for drinking and general purposes, declaring the animal was glandered. The owner insisted that it was not, but he determined to bring it to me for the benefit of my opinion. On going out to look at the animal I found a very useful-looking grey mare, in excellent condition, and with a good coat. The owner said he had had her about two years, and, with the exception of a very slight discharge from the nostrils, that she had nothing the matter with her. He rode and drove her, and used her for ploughing and other farm-work, which she did well, and without showing any signs of distress. She had no cough, and fed well. I then made a very careful exami-

nation of her, and could find no enlargement of the glands, nor any indications of Farcy; but there was a very slight discharge from the nostrils and some white streaks and patches on the Schneiderian membrane. I felt very doubtful about the case, and decided not to give an opinion that day, and told the man so, asking him if he would bring it in again a few days later, which he readily consented to do. I then looked up all the authorities I could on the subject, which were very few, as I had none of the advantages of Fleming's and other works then; and I thought over and compared this with other cases I had seen amongst the stage-horses. When he brought the animal again, I examined it most carefully, and then told the owner that his horse had Chronic Glanders; that it would appear well and do its work, and continue so for an indefinite time, which might be weeks or years, but that it was liable to infect other horses, and was dangerous to himself and others who attended it; that, therefore, he would do well to destroy it, but if he refused to do so, I had no power to compel him, though he must not let it run at large nor use it on the public roads.

A day or two afterwards the man appeared again with his mare, accompanied by Mr. J. W. Winter, M.R.C.V.S., who had retired from the profession, but who often gave his opinion when asked, as he was in this instance, as the owner was not satisfied with the opinion I had given. Mr. Winter asked what I had told the man, and I replied that I had said the mare had Chronic Glanders, and was dangerous to other horses and to any person attending it, and so on; upon which he turned to the man and said: "Now you hear what Mr. Wiltshire says, and you had better take his advice and keep it isolated, etc.," and they then left. An hour or two afterwards I met a neighbour and friend of this man, who told me—to my great astonishment—that this was the same mare that I had condemned two years before, and that several people were curious to know what opinion I should give.

Shortly after this, the neighbour first referred to made a complaint, and the owner was prosecuted for contravention of the Glanders Law in allowing this horse to run on unenclosed land; and at the trial before the magistrate I gave evidence to the effect

that the animal had Chronic Glanders, and was incurable; and, on the other side, Mr. Winter said that there was no doubt that the horse had had Glanders at some period, but that he differed from me, as he was of opinion that Glanders was curable, and that the animal was suffering from Nasal Gleet at this time. The magistrate, in summing up, said that the evidence of the two professional gentlemen was opposed, and therefore he must give the defendant the benefit of the doubt, and dismiss the case. From information I have lately received about this mare, I learn that she is very thin, broken-winded, has a discharge from the nostrils, and there are reasons for believing that she has conveyed the disease to other horses that have died of it. Certain it is that some of the neighbours will not permit her to enter their stables, and I understand, too, that her owner rarely, if ever, takes her away from home.

During the Zulu war I was in medical charge of the Remount and Mule Train Depôts for a period of about eight months, during which I saw many cases of Glanders-Farcy in every stage of the disease. The most interesting cases, however, were those which occurred amongst the large American mules brought from the United States. When the first lot arrived at this place, Mr. Gudgin, P.V.S., and I went down to inspect them early in the morning, and finding one with a discharge from the nostrils we had him isolated some distance from the camp, where he was secured to a picket peg. Other cases quickly followed, which were secured in the same way, until we had seventeen in all. Each animal was carefully inspected every day by me, and very often by Mr. Gudgin also, and every precaution was used to prevent contact with them, and every article used about them, and the coloured attendants were not allowed to go near the other camps.

Some of the cases soon developed in the ordinary way, but most of them were of a very occult character. It was interesting to watch the fluctuations of the disease; oftentimes an animal would look bad for a few days, showing it in the eyes and nostrils particularly, and we began to anticipate such a development of the disease as would justify us in destroying it, but all at once it would appear better, and in a short time look

as though it might be discharged at an early date. This happened several times, particularly with the mule first isolated —a brown one—which finally did not show any ulceration of the nostrils till four months after its isolation; and another—a chestnut—which was nearly the same time.

The extent to which Glanders-Farcy has spread in South Africa, and the damage it has done, does not appear to be realised; and even now there are to be found men who deny the existence of the disease in the country. Others, again, persist in trying to effect cures of cases, sometimes with disastrous results, as happened in the following case. I was sent for one Sunday morning, early in January, 1883, to see a horse belonging to the market-master of this city, who had bought it some months before from the military authorities when they sold off a lot of the horses used in the Boer war. When I saw the animal I found it badly glandered, with Farcy buds on the legs and various parts of the body. I at once strongly urged the owner and his sons to destroy it, and specially pointed out the danger they exposed themselves and their Kaffir servants to in attending to it, and also the danger to other horses, and so on, as well as advised what measures for disinfecting the stable, etc., should be adopted, but declined to recommend any treatment. A few months after, I left for a visit to England, and on my return to the colony last year I heard that one of the sons had died a shocking death from this terrible disease. I found that the owner—a very good fellow in his way, but impulsive—would not take my advice, but determined to try and cure the horse; and this son in cleaning the sores is believed to have been inoculated through a sore on his hand, and I believe his sufferings were dreadful.

When I met his father after my return, he said: "You have heard about my poor boy? It's all my fault, and there's no blame attached to you. You cautioned us about it, and told us of the risk, and advised us to destroy the horse, and did the best you could; but we rejected it, and the blame rests upon us." I felt very sorry for the old man; for the youth was a nice young fellow, and could be ill spared.

Possibly some may be surprised that the Glanders Law was not

brought into operation ; but it will cease when I explain that it is one of the most inefficient laws that was ever framed, and for all practical purposes is utterly useless, as I have repeatedly pointed out to the Government ; but now a new law is before the Legislature, which, I trust, will give my department greater powers and recognition, and prove efficient when it becomes necessary to enforce its provisions.

The influences which affect the development of Glanders-Farcy, both in its most virulent and occult forms, are—to me—a very interesting study, and have often set me thinking ; but I am afraid that I can add very little to the solution of the problem. Of course, I know that the disease is due to a bacillus, and I am acquainted with the results of the cultivation of the microbe outside of the animal body, and the experiments with the cultivated germ on animals. But that does not explain why, in the case of a number of horses under exactly the same conditions, some should develop the disease in an acute form, while others show it so obscurely as to leave the observer in doubt whether they have it or not. Can it be due to individual cachexia, depending on the temperament of the animals ; so that those with a sound nervous organisation, that digest their food well, and have all their assimilative and excretory organs in good working order, are enabled to resist the effects of the disease, while those of a lymphatic temperament and gross habit of body, and in which the eliminative processes are defective, are eminently susceptible? These influences, it has often occurred to me, are important factors; and this, I think, is further borne out by the conditions known to be favourable for the manifestations of the disease, viz., bad sanitary conditions, such as "ill-ventilated stables, confinement on board ship—when, from bad weather, sufficiency of air cannot be given—the debilitating effects of bad food and disease." Of the latter cause I have had experience, and have often found an animal develop Glanders after an attack of the low form of Anthracoid Fever which prevails here ; and it is recognised as a sequel of Strangles, Influenza, and the like.

Again, anything that rouses the absorbents into action assists in its development ; for intance, the administration of a brisk aloetic purge to an animal that is suspected will often bring it

out; starvation and hardships are also potent agencies, as shown by the following cases. In 1879, at the close of the Zulu war, the horses of the 17th Lancers, King's Dragoon Guards, and other branches of the service, were sold; a large number of these went into the Orange Free State and Transvaal, while the rest were scattered all over this colony; but the moment they left the care of the military, instead of being well fed, as they were accustomed to, they had to subsist on the veldt, where the grass is much less nutritious than English grass. The result was that hundreds soon died of starvation, a large number of which developed Glanders-Farcy, though at the time of their purchase they showed no signs of the disease.

I wish it to be distinctly understood that I do not believe in the spontaneous generation of this or any other contagious disease, though I am convinced that they may remain dormant in the system until some cause, which cannot always be recognised, renders them manifest.

It is much to be desired that members of our profession would publish their experience of this disease for the benefit of students, young practitioners, and those who rarely meet with cases of Glanders-Farcy, as well as those of us who may have overlooked some phases of it. It is wished also that *savants* who possess the knowledge, and have the means for working in out, would give us the life history of the Glanders bacillus; its effects upon the blood and other tissues of the body; the particular elements the organism appropriates for its nourishment and development; and, lastly, the readiest way of detecting the microbe with the microscope. Seeing is believing; and to those, like myself, living on the frontiers of civilisation, amongst people whose isolation leaves them in the rear of the march of progress, it would be of great value to know a ready method of demonstrating the presence of the germ when our opinions are questioned, as we have not the advantage of obtaining the valuable personal and moral support of the leaders of the profession, like our more fortunate brethren at home.

GLANDERS IN HONOLULU, HAWAIIAN ISLANDS.

WE have received from a correspondent in Honolulu, some particulars regarding an outbreak of Glanders in the Hawaiin Islands, which are of much interest with regard to the geographical extension of the disease, especially in the Pacific, and the danger to which Australia and New Zealand are exposed from that quarter.

In October, 1884, it was discovered by a veterinary graduate of the Montreal School, that Glanders was actually present in the Hawaiian Islands, which are situated within the tropics, 2,000 miles from San Francisco, and on the direct route of the Mail Steamers to and from our Colonies. It may be mentioned that there are four principal islands, with a population altogether of about 75,000 people; 40,000 of these are natives, the remainder being Europeans, Americans, Chinese, etc.

The principal export of these Islands is sugar, and for the production of this a great many mules and horses are employed; altogether the value of this stock is considerable.

It seems that owing to the widely scattered condition in which the plantations are situated on the different islands, it has not been considered profitable to invite a veterinary surgeon to settle in the kingdom; but one was finally appointed. When he arrived he found great ignorance in regard to veterinary science prevailing, and the charlatans in full sway. The erroneous impression which he found most difficulty in removing from the minds of the people, and which they said they derived from such veterinary works as they had, was that Glanders could not exist in a *tropical country*.

The law of 1844, as amended by the session of legislature of that kingdom, with reference to the suppression of diseases amongst animals, gives full power, it appears, to quarantine all suspected animals, and, if necessary for the protection of the interests of the healthy stock, to utterly destroy them.

The first two months after the arrival of the veterinary surgeon, he did not enforce the law, as he found so many horses affected with Chronic Glanders, and working every day, some of them

valued at from two to five hundred dollars, and the Government not having made any appropriation for the purpose of paying for part of the loss sustained, that he merely warned the owners of diseased animals of their danger. He, however, destroyed quite a number that were given voluntarily to him, and made ten or eleven *post-mortem* examinations, chiefly to instruct and convince the public of the true nature of the disease.

In December, however, having secured a suitable quarantine ground, he was requested by His Excellency, C. F. Gulick, Minister of the Interior, to enforce the law; and from December up to the 30th of June of this year, when he sent in his half-yearly report to the Minister of the Interior, he had destroyed eighty-eight horses and two mules. This was in Honolulu alone, where, however, most of the disease existed.

When he began the enforcement of the law, he met with no opposition from the owners, so thoroughly were they convinced of the fatal nature of the disease. The value of the animals destroyed would have been, had they not been diseased, 25,000 dols.

From the most reliable accounts which could be obtained, the disease—Glanders—has been on the islands five years, and was brought by means of diseased horses and mules from San Francisco, U.S.A.

The loss in Honolulu previous to the arrival of the veterinary surgeon, as near as could be ascertained, was 40 horses; on the Island of Mani, 150 mules, valued at 30,000 dols.; on the Island of Hawaii, 75 mules, valued at 15,000 dols.; on the Island of Kanai, 15 mules, valued at 3,000 dols. Making a total of 370 horses and mules, valued at 79,000. But there were, no doubt, many more animals lost.

At the date when this information was dispatched, the veterinary surgeon had made a tour of inspection of all the islands, and found that the disease was almost entirely eradicated.

In Honolulu, since the 30th of June, only five animals have been destroyed, and these had been suspected for some time.

Altogether fifteen *post-mortem* examinations had been made, and some very valuable pathological specimens of the septum nasi and submaxillary lymphatic glands and lungs were procured.

The last *post-mortem* made was on a thoroughbred stallion, valued at 5,000 dols., the property of the king. The veterinary surgeon condemned this animal as glandered last November, but the king, believing he could be cured, had him removed to the country to an isolated paddock, and attended by native doctors; but all to no effect, and he was given over to be destroyed. This stallion was in good condition when destroyed, fully one inch of fat on his ribs, but the septum nasi was almost entirely covered with cicatrices, and the superior turbinated bone on one side was firmly adherent to the septum, caused doubtless by the extreme inflammatory process which had taken place for a considerable period. The lung tissue was simply infiltrated with Glander nodules. No further outbreak of the disease was anticipated, and all animals are now subjected to a rigid inspection on arrival from any foreign port. Amongst the animals destroyed, the majority were affected with Chronic Glanders; a few of them began with farcy symptoms, and soon they terminated in Glanders.

When mules became affected, it was almost invariably the case that they had the disease in an acute form, and died within from four to ten days.

A native had died, who, according to the physicians who attended him during his illness, was in all probability affected with Glanders.

Editorial.

PROTECTIVE INOCULATION FOR HYDROPHOBIA.

THE wonderful results which we have from time to time recorded as following M. Pasteur's method of protective inoculation against certain contagious diseases of animals, have been eclipsed—so far as present appearances go—by what he has attempted to do with regard to Hydrophobia. Hitherto his experiments have only been carried on with animals, in which he has demonstrated, in the clearest and most striking manner, the great value of his discovery of protecting the organism by what is termed "attenuated virus"; but now, according to a statement he recently made to the Academy of Sciences of Paris, so confident is he of the efficacy of his method, he has ventured on the bold step of inoculating human beings who had been bitten by supposed rabid dogs, with the modified virus of Rabies, with the view of preventing the development of the disease in them.

As we have before mentioned, M. Pasteur some time ago succeeded in rendering proof against Rabies some sixteen out of every twenty dogs experimented upon; but to ascertain that immunity had really been conferred, he had to wait four months after the inoculation had been made. He therefore set himself to obtain virus of different degrees of strength, with the object of obtaining prompter and more certain results. This was effected by the following means: A rabbit was inoculated with a fragment of tissue taken from the spinal cord of a rabid dog. The incubation of the poison occupied fifteen days. As soon as the rabbit was dead, a portion of its spinal marrow was in turn inoculated into a second rabbit, and so on until sixty rabbits had been inoculated. At each successive inoculation the virus became of increased potency, and the last period was not more than seven days. Having ascertained that exposure to dried air diminishes the virus, and consequently reduces its force, M. Pasteur supplied himself with a series of bottles containing dried air. In these bottles were placed portions of the inoculated spinal marrow of successive dates, the oldest being the least virulent, and the latest the most so. For an operation, M. Pasteur begins by inoculating his subject with the oldest tissue, and finishes by injecting a piece dating from two days only, whose period of incubation would not exceed one week. The subject is then found to be absolutely proof against the disease.

At the beginning of July a young Alsatian, named Joseph Meister, who had been severely bitten in several places by an undoubtedly rabid dog, presented himself at the laboratory. His case, left to itself, being considered hopeless by M. Pasteur, Professor Vulpian, and other high authorities, the patient was submitted to the same series of inoculations that had been so successful on dogs. As a proof, a series of rabbits were simultaneously subjected to the identical processes. In ten days, thirteen inoculations were made with pieces of spinal marrow containing virus of constantly-increasing strength, the last being from the spine of a rabbit which had died only the day before. The youth thus operated upon by the successive administrations of weaker virus seemed to be made proof against the virus of the intensest strength. It was then (when Pasteur made his statement) one hundred days since he underwent the last inoculation, and he is in perfect health. Those rabbits, on the contrary, which were at once inoculated with the strong virus, without first being rendered insusceptible to its action, became affected within the proper incubation period, and died with the usual symptoms. The first inoculation practised upon Meister was sixty hours after he had been bitten. M. Pasteur had also at that time another human patient under treatment who was bitten a few days before by a mad dog.

M. Pasteur said it would now be necessary to provide an establishment where rabbits might always be kept inoculated with the disease. In this way there would constantly be a supply of spinal tissues, of both old and recent inoculation, ready for use. Before the sitting was adjourned M. Pasteur received an enthusiastic ovation from both the Academy and the public present.

We learn that some individuals bitten by a rabid animal in Algeria

have arrived in Paris to undergo his treatment, and no doubt he will have many more claimants to this attention. In dealing with such a disease as this, prudence dictates caution in speaking confidently as to the probable success of protective inoculation.

The fact that only a certain percentage—and that a comparatively small one—of people or animals wounded by rabid dogs take the disease, and that the period of incubation is very uncertain, and often most protracted, renders caution necessary in giving an opinion as to the value of this prophylactic measure; and it will require a larger number of cases and a longer period of observation, before even those who have some faith in such a method can accord it their full recognition as a means of warding off this terrible malady in those who chance to be infected. And if it should happen that it proves successful, it is a question whether it can be utilised practically in extinguishing the disease. For ourselves we are at present of the opinion that well-devised and rigidly-enforced sanitary measures could certainly and speedily rid us of the scourge, and do away with the necessity of resorting to this very delicate, and perhaps very uncertain, operation practised with so much hardihood upon his own species by M. Pasteur.

TUBERCULOSIS.

AT a recent meeting of the Paris Biological Society, Professor Nocard, of Alfort, stated that he had succeeded in cultivating the Bacillus Tuberculosis. On pursuing Koch's method, he arrived at negative results. He therefore modified the cultivation medium, by adding 1 per cent. of peptone to horse serum, 0·25 of sugar-candy to a hundred parts of serum, and the same proportion of sodium chloride. These additions were made before gelatinisation was effected. The first three cultivations were made according to this method; the fourth was effected in pure serum of horse's blood, but the process was slower. According to M. Nocard, all domesticated birds are liable to Tuberculosis; the bacillus found in them is identical with that of tuberculous mammals. In 1884, Johne (*Zeitschrift für Microscopie und Fleischhand*) published some facts concerning a poultry-yard which was infected with Tuberculosis on the arrival of a phthisical person, whose sputa were poured on to the dung-heap in the poultry-yard. M. Nocard has published, in the *Recueil de Médecine Veterinaire*, three instances similar to that described by Herr Johne. Careful investigation demonstrated that the birds succumbed from Tuberculosis after tuberculous sputa were mixed with their food. M. Nocard's data furnish proof that Tuberculosis can be communicated to birds by animals. At Vevers there is a tripe shop attached to the slaughter-house. The proprietor of the shop has a small poultry-yard; most of the birds in it die from Tuberculosis. They are fed on diseased parts of the animals which are unfit for sale, especially lungs, liver, spleen, and tuberculous glands. By inoculating with tuberculous matter from animals, or mixing it with the food, M. Nocard has killed four fowls, six pigeons, and a turkey. These all died in a space of time varying from six weeks to four months. In three instances they were fed on chopped-up lungs and tuberculous glands removed from a horse and two cows, all of which were phthisical. M. Vignal, at the meeting of the Paris Biological Society, pointed out that the addition of sugar, sodium chloride, and peptone to serum, indicated a completely new medium of cultivation.

Proceedings of Veterinary Medical Societies, &c.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE Quarterly Meeting was held at Blackfriars Hotel, Manchester, September 9th, 1885; the President, Samuel Locke, Esq., in the chair.

Mr. EDWIN FAULKNER read a good practical paper on Septicæmia, in which he discussed its pathology, and cited the opinions of various authorities; he pointed to its varying degree of virulence, and to modifications as seen in the human subject and in our several classes of patients. Especial attention was given to that form which follows parturition. Mr. Faulkner appended notes in detail of several cases, comprising examples of the *post-partum* variety in the mare and cow, and one following castration in the horse.

A very good discussion ensued, in which the following gentlemen took part:—Peter Taylor, Thomas Greaves, J. S. Hurndall, W. Dacre, E. Meek, T. Hopkin, G. G. Mayor, W. A. Taylor, J. Lawson, and J. B. Wolstenholme.

After Mr. FAULKNER had replied, a vote of thanks was given to that gentleman for his paper.

MR. B. WOLSTENHOLME.
Hon. Secretary.

THE WESTERN VETERINARY MEDICAL ASSOCIATION.

THIS Association held its fourth meeting in the Half Moon Hotel, Exeter, on October 15th; the President, J. A. Collings, Esq., in the chair.

On the motion of the President, it was resolved that Rule 6 shall read as follows:—"That the officers of the Association shall be a President, Vice-Presidents, a Treasurer and Secretary, who shall be elected annually at the General Annual Meeting, such office-bearers being eligible for re-election."

Mr. J. P. HEATH gave notice that at the next meeting he would propose this Association should form a Mutual Defence Association.

Mr. PALLIN exhibited a horse-shoe in which there were twenty-three perfect nail-holes. He said the farrier of his regiment, in a fit of temper, made the shoe and fastened it on a horse by driving a nail into every hole; but, strange to say, without pricking the animal.

The PRESIDENT then called on Mr. Olver to read the following paper, entitled:—

"A FEW OBSERVATIONS ON THE WARBLE-FLY OR OX BOB-FLY."

The subject which I have chosen for my paper is one which is undoubtedly well known to the whole of you, it being that of the Ox Warble-fly or Bob-fly, scientifically known as the "Œstrus bovis" (Clarke), "Hypoderma bovis" (De Geer); but probably very few of our clients know the cause of the lumps they so often see on the backs of their cattle, which at certain seasons of the year appear to give them so much trouble; neither are they aware how much it deteriorates the value of the hides, and I am one of those who believe it is our duty, as far as possible, to make them more familiar with such subjects.

In no branch of medical inquiry has there been more progress made within these last few years than that of helminthology, and there is no class of people who get less encouragement than the helminthologist. For it sometimes requires months of precious time spent in research to acquire possession of a single new fact of any practical importance; and when the dearly-purchased truth is at length enunciated, it is soon bandied about without the smallest concern respecting either the toiler or the toils which together gave it birth.

Parasitic diseases, more than any other disorders of domesticated animals, make themselves felt by the community, for they spread rapidly among

herds, are often very fatal in their effects, and cause a large pecuniary loss by diminishing their value, and not unfrequently can originate disease of a like kind in man. Little has been written in connected form regarding the history of the ox warble attack since the time of Bracy Clark's well-known treatise, until the recent observations of Miss Eleanor A. Ormerod, Honorary Consulting Entomologist of the Royal Agricultural Society of England, from whose work I have collected some of the following facts :—

The ox warble-fly or bob-fly is a two-winged fly, upwards of half an inch in length, so banded and marked with differently-coloured hair as to be not unlike a humble-bee. The face is yellowish ; the body between wings, yellowish before and black behind ; the abdomen whitish at the base, black in the middle, and orange at the tip ; the head is large, the wings brown, and the legs black or pitchy, with lighter feet. The female is furnished with a long egg-laying tube, but whether she inserts her eggs into the hide or lays them on it has not been made out with certainty. Egg-laying takes place during the summer ; it may begin in the month of May, but the time varies with weather, and with the cattle being on low land or hill pastures.

The egg is oval and white, with a small brownish lump at one end.

In Cornwall the insect generally deposits its eggs from the middle of July to the middle of August, and, judging from the way the cattle gallop about the pastures, with tail erect, I am inclined to think the ovipositor pierces the skin, and the egg is deposited within it ; but it should be borne in mind that the damage from galloping is in part caused by the ox gadfly, "Tabanus bovinus," which is a very different insect to the warble-fly. The gad fly drives its jaw lancets into the cattle, and sucks the blood, consequently causing severe pain, whereas the warble-fly has nothing but an obsolete mouth. If the flesh side of the skin be examined early in the winter, the first appearances show that of small swellings, bluish in colour, as if a large shot was under the skin, and much inflamed around.

The maggots will then be very minute and blood-coloured (due to their feeding on extravasated blood), and lying free (not in a cell) with a fine channel down through the hide where they lie.

It is important to note that this channel varies in direction, sometimes being perpendicular, others more or less obliquely, and again sometimes wavy.

Open warbles may generally be found about the end of February. The maggot is now white, not feeding on bloody matter, wormlike, and with strong mouth-hooks ; in its next stage it is club-shaped, and has the power of inflating itself by drawing in fluid, and lying small end uppermost, thus pressing the opening through the hide larger ; in its next stage it gains its well-known shape, with a thicker and more prickly skin, the warble-cell at the same time gaining its membranous coating. The maggot can move up and down, but commonly has its brownish-tipped tail at the opening, and it draws in air through breathing pores in these brown-black tips or spiracles. The mouth end is down below, feeding in the ulcerated matter caused by the irritation of the mouth-parts. The maggot cannot protect itself from applications, therefore anything put on the opening where the breathing tips show will choke the breathing apparatus, or run down the hole and poison the maggot. The earlier this is done in the season the better it will be for the animal, and the less difficulty there will be for the warble-holes healing.

Several modes of preventing the attacks of the fly have been suggested, neither of which, in my opinion, are very practical, and could not be well carried out in large herds, especially those which range over extensive tracts of land.

Among them are the following, viz. :—

1. Applying mixtures of such a strong smell as may be obnoxious to the fly, and overpower the attraction of the smell of the animal.
2. Applications that would stick the fly fast, or kill the egg.
3. Washes which would clear off the eggs or destroy them if laid on the skin, or if lying just beneath the outer cuticle.
4. Protection afforded to cattle by being housed at egg-laying time.

I presume you are all aware that when cattle are standing in water the fly does not attack them, consequently it is highly important that there should be plenty of water in pastures where animals are kept during the summer months.

With regard to the methods of remedy, there does not appear to be any difficulty in getting rid of the warble-maggot when it is what is termed ripe. Miss Ormerod, in her pamphlet, recommends that each warble be "*just touched*" with a little mercurial ointment, which, in my opinion, is very much too dangerous a preparation to be used by people who are not aware of the evil consequences that may arise from its too free application, especially when much more simple and non-poisonous agents are equally effectual.

Any greasy preparation containing a little carbolic acid or tar, and even ordinary cart-grease, is said to have the desired effect. Many of the leading agriculturalists of England have followed Miss Ormerod's advice, by using a little mercurial ointment, with very satisfactory results, but a client of mine, who has a valuable herd of shorthorns, was induced, from articles and letters he had seen in the agricultural journals, to try it on his cattle—about fifty—in the latter part of May of this year. In about a fortnight after its application, finding that two or three of his cattle were unwell, he requested me to see them, which I did, and was puzzled as to the nature of their complaint. I again saw them on the following day, and was then informed that mercurial ointment had been applied to their skin for the destruction of the warble-maggot. Naturally I looked for any evil consequences that might arise therefrom, when I found every symptom of excess of mercury in the system; the cattle would not feed, there was a continuous flow of saliva from the mouth, the gums were soft and spongy, and all the teeth were very loose. These symptoms lasted several days, when they gradually improved, commenced to feed, etc., except in one instance; this beast became perfectly prostrated, and either would or could not rise, and as he appeared to be getting worse I thought it advisable to have him slaughtered.

The remainder of the herd I had washed with an alkaline solution containing Pot. carb. and sapo mollis, to remove, as far as possible, the ointment that still adhered to the skin, and after about ten days they all appeared to be in their usual health. Several of the cattle appeared to suffer in a lesser degree, and the ones that suffered most had a very large number of warbles and the mercurial ointment had been applied a second time.

Several letters passed between Miss Ormerod and myself on the subject. I also sent her a sample of the ointment used, which she placed in the hands of one of our leading veterinary surgeons, who informed her that it was ordinary mercurial ointment, and that the teeth of cattle were always loose, a fact, I presume, with which most of us are acquainted. I have never tasted mercurial ointment, but have an idea that it is rather sweet, and my notion is that the cattle licked off some of the ointment, which will partly explain why they suffered from an excess of it.

Thanking you very much for the attention you have paid to these few disjointed remarks, trusting that your time has not been quite wasted, and please kindly remember that it was written by a hard-working country practitioner who has very little time or inclination for writing.

The PRESIDENT remarked that the study of helminthology was one of the

greatest interest, and no branch of it was more so than that with which the essayist had been so ably dealing. In no other profession were there so varied or so many subjects requiring the attention of the student as in that of our own profession. He trusted we should have a good discussion.

Mr. HEATH said that death only followed attacks of warble-maggot in cases where the ignorant use of dangerous remedies was resorted to. If the larvæ were allowed to develop of their own accord no harm would happen to the general health of the bearer. He would not like to back up Miss Ormerod's opinion in recommending the application of mercury to the backs of cattle. He generally employed turpentine for the destruction of the warble, and with success. He had known several horses die from the presence of the larvæ of "Œstrus equi" in the stomach and duodenum: balsam of sulphur, he believed, was the best agent for their destruction. He had attended a cow with a very large abscess on the back and side, which was the result of the irritation of the warble-maggot.

Mr. PENHALE, jun., thought the "Œstrus bovis" a great pest to cattle all through the hot summer months. Cattle had a great dread of the fly, either from instinct or the memory of pain produced by the punctures of the female to deposit the ova; in this way they were constantly driven scouring over the pastures seeking either shade or water, where the fly will not follow. The frequent results of this violent exercise were abortion, colds, Pneumonia, and still more often of Mammitis, by standing in cool places after being in such a very heated condition. He believed the fly caused a greater loss to stock-owners in this way than it did by any injuries produced in the skin or flesh. He therefore thought their efforts should be directed to prevent the œstrus attacking cattle during the summer season. He regarded mercurial ointment as a very unsafe remedy to apply to the backs of cattle. He had frequently seen cases of salivation and Paralysis as a result, when it had been used by injudicious persons as a cure for Ringworms. He was of opinion that it entered the system both by licking and absorption. Young cattle suffered severely from the irritation of the maggot in the early spring months, and once he attended a young heifer which was condemned for Symptomatic Anthrax, the atmosphere having gained entrance through the warble, producing the characteristic crepilis of that disease. Fortunately it was not destroyed, and in a few days made a good recovery.

Mr. BURTON said he had found a mixture of Zinci sulph., ol. terеb., plumbi acet., and tr. benzoin very destructive to the warble-maggot, when applied to the backs of animals infested with them.

He believed the flesh was very much injured, as well as the skin, owing to the constant irritation of the maggot, and by the animal violently licking itself to allay the itching. He had found from experience with horses, that it was necessary to dress the skin daily in order to prevent flies attacking them. He used a weak solution of carbolic acid, which was perfectly successful for the purpose.

Mr. PARSONS had no doubt but that the hides and beef of cattle were much injured by the warble-maggots, and he believed the animals were not unfrequently inoculated with septic germs by the œstrii. He was not inclined to throw so much blame on Miss Ormerod for her suggestion, although he would not recommend the application of mercury to the backs of animals himself. He thought the salivation arose in the cases alluded to by Mr. Olver from using an excessive quantity of the ointment, and turning the animals out in the wet weather which was then prevailing.

Mr. ELDER said numerous cases of chills, congested lungs, and Pneumonia arose from animals standing in cool, airy places after being chased by these flies. He thought persons in high places, whose opinions were looked up to and carried great weight, should be very careful not to recommend

dangerous remedies of which they had no practical experience, especially when comparatively harmless agents would attain the same end.

Mr. CHASE thought the subject which had been so ably treated by Mr. Olver a most important one. There could be no doubt but the parasite, besides being a source of great discomfort to cattle, also caused serious losses to the tanner and butcher. He was of opinion that it would be greatly to the farmer's benefit to take some precautions to prevent the ova being deposited in the skin.

Mr. PARSONS proposed a hearty vote of thanks to Mr. Olver for his very instructive and interesting paper. It was a subject a little out of the beaten path of papers usually read at such meetings, but was all the more valuable on that account.

Mr. CHASE seconded.

Mr. OLVER said he was grateful for the way in which his paper had been received by the Association. The subject was one of growing interest and importance to the agriculturalist, and was daily drawing more attention because of the serious loss to the hide.

It was resolved that the next meeting should be held in Exeter, on March 12th, 1886.

Mr. OLVER proposed, and Mr. BURTON seconded, a vote of thanks to the Chairman for so ably presiding on that occasion.

After the meeting, the members of the Association were entertained to an excellent dinner by the President; the usual loyal and professional toasts were proposed and duly responded to, and a most enjoyable evening spent.

W. PENHALE, *Hon. Sec.*

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the members of this Society was held on September 30th, at the White Hart Hotel, Spalding.

The President, R. T. Hardy, Esq., took the chair.

The SECRETARY read a letter from the Secretary of the Royal College of Veterinary Surgeons, acknowledging the receipt of this Society's letter, containing a copy of the resolution passed at the last meeting, as to the Election of Council.

Mr. MACKINDER proposed that the next meeting be held at Lincoln, and the motion was unanimously adopted.

Professor WILLIAMS then delivered his address on

PRACTICAL REMARKS ON THE DIAGNOSIS OF SOME OBSCURE DISEASES.

Professor WILLIAMS said he had no paper to read, and he had been anxious that they should select a subject for him, so that he might have prepared one. He would, therefore, simply make a few practical observations upon some puzzling cases which had come under his own notice. He knew he was speaking to practical men, and although some might say they had seen such cases as he would mention before, his remarks might be of some assistance to some members, and if so he should be rewarded for any trouble he had taken in the matter. (Hear, hear.) To begin with, an animal might be suffering from a disease, and it was difficult to make out what it was. Let them take the case of a horse which was gradually losing flesh, and which ate not so much as usual, but moderately well. It had a capricious appetite, eating more to-day than to-morrow, and all the time the gradual loss of strength went on. The functions of the body seemed to be performed pretty well, and there was no indication of liver disease. The urine was its natural colour, with no tinge of bile; the proper quantity was regularly passed, and

the passage seemed to give no pain. The skin was not very tight upon the body, and there was no cough in a non-complicated case. If they took the animal's pulse they would find forty-five or fifty, or perhaps the natural pulse, but more or less debilitated according to the stage of the disease. If they examined the chest, heart, or lungs, they would find them all right—quite normal—and they would conclude there was nothing at all the matter with him. On looking at the digestive organs they would find the mouth clean, and no disease of the stomach particularly. One veterinary surgeon would say he was suffering from so-and-so, and another would say from so-and-so, and there they had a great difference of opinion. The horse would gradually become unable to work, fall off in condition, especially in the loins and back, without any indication of the vital organs being at fault, and it therefore became a very difficult matter to deal with. He had met with such cases repeatedly. At first the evidence was negative only. Many years ago he came to the conclusion that the cases arose from disease of the spleen. He found that was an accurate guess, because when the organs ceased to perform their functions they had indications of the disease in the yellowness of the urine. In the absence of active symptoms he came to the negative conclusion that the spleen must be the seat of the disease, and he found it was so. By more careful examination and observation of the case they would arrive at positive evidence, and then the symptom he had mentioned became a very important one. Physiologists told them that the spleen was concerned in the elaboration of blood, and if they bore that in mind it would help them in considering the symptoms of the case. In some cases the tumours were enormously increased, and the lymph and glandular tissues were sometimes an enormous size. He had seen them 100lbs. in weight, without any enlargement of the belly, and when the *post-mortem* had revealed a spleen of that weight, all sorts of notions had been given as to the nature of the disease. In order to ascertain its nature, he could recommend to them as the result of his own practical experience, the daily examination of a drop of blood extracted from any part of the body, and they would find a positive symptom that the spleen was in a condition of disease, having the appearance of a large agglomeration of whitish tumours. Some of them were small and others large, but they were all hard and tough, and not dissimilar to a tendon when cut across, with streaks here and there of a crystal appearance. It was an incurable disease—the horse always died—and it was useless for a veterinary surgeon to attempt any system of treatment, because it would be unjust to the proprietor of the horse. The disease was fatal in its nature, and sometimes it was very prolonged and sometimes very rapid. He had known it to kill in two months, and in other cases he had known it to go on for more than a year before terminating fatally. They might find a horse with an enlarged gland protruding into the front of the shoulder, go on working for years in that condition, but when it began to lose flesh and appetite, they could depend upon it (he spoke from long experience and close observation) that this tissue was growing in the spleen, and that the horse was in a state of Lymphadenoma. One of the symptoms of the advanced stage was the horse wanting to rest on the manger with his mouth open. He would grasp the iron manger, and if in a loose box he would turn round and grasp the top of it, remaining there for a long time. That seemed to cool him, and there was no doubt that the spleen became so hard that it produced congestion of the stomach, and cooling his mouth gave him relief. The disease was very interesting, and it affected cattle, dogs, and human beings. He had seen it in cattle repeatedly, but there they had the indication without the tendency to undergo degeneration. It never went beyond the cellular state, because as soon as it was developed it commenced to wither. That was Lymphadenoma, and it was so well marked that he had

seen the tumours extend from the muscles of the neck and grow to an enormous extent. If a veterinary surgeon treated a cow which had a tumour of that kind, he would remove it, and then if he put it under his microscope he would find it consisted of connective tissue of such a nature that the sooner the cow was made into beef the better, supposing it was fit for food. He has seen tumours weighing from 7 lbs. to 14 lbs. removed from cows. He had seen the disease in the human being, and he had skeletons showing it in his possession at the present time. Some time ago Professor Stewart, of Edinburgh, asked him to go and see a woman, about fifty years of age, who was bitten by a horse on the point of her finger some years ago. The finger was amputated, and since that time small tumours had grown upon her. He went to see her, and found tumours all over her body, and he expressed his opinion that it was a case of Lymphadenoma. The woman died a fortnight after, and the condition of her body after death supported his opinion. Some time ago he was asked to attend a mare and remove a tumour which interfered with the act of deglutition. He found an immense tumour on the head, running in various directions, and he said he could not remove it, the roots were so strong and deep. He ascertained that the mare had been losing flesh, but that she had previously swallowed well. He was prevailed upon to remove the tumour, and he found it weighed about four pounds. The same night the veterinary surgeon who was attending the mare sent a small bottle of carbolic acid, with an order that it was to be mixed with oil, and applied to the wound which had been made by the operation. They did not mix it with the oil, but injected the pure carbolic acid, and the result was there was such an immense swelling that the mare died from suffocation. He found a spleen weighing seventy-five lbs. By careful investigation and a daily examination of the blood of the animal, they would find an indication that would be a positive sign to them of the disease. It might be supposed that it was the result of poisoning in pharmacy, but he felt sure from what he had seen, that the condition was a simple and accidental complication. Young horses were also subject to the disease, and he remembered a case where a valuable young horse, worth about £85, had a rather inflamed tumour near the jaw. He was blistered once or twice, and then he was taken to his (Prof. Williams's) place in a rather emaciated condition. The tumour was very hard, but when the age of the horse was taken into consideration, it was a very feasible conclusion that it was only a case of strangles. He soon saw indications, however, which proved to him that it was Lymphadenoma, and after the horse had been under his care several weeks it died with an immensely large spleen, weighing 60 lbs. or 70 lbs. The disease commenced with a cough and cold, and an enlargement of the glands. The horse had been perfectly well before, and ten weeks did not elapse from the time the horse was first taken ill to its death. He had no hesitation whatever in saying what was the condition of the horse. There was a general stiffness about it, he would rest his teeth for hours together upon the manger, and lie on his belly, and all those things indicated Lymphadenoma. The next disease he would mention was one ably described by Professor Varnell in 1869, and afterwards re-produced in his (Professor Williams') works. The disease was met with to a considerable extent, and especially amongst foreign horses, but it often differed very much. They would find one side of the horse's face bulging a great deal, but that only came as last symptom of all. The animal would be excessively lame and in a few days they would find the hock enlarged and the extremities very painful. They might say it was a case of rheumatism, but it differed from rheumatism in this particular: that the tendons were not affected, and the disease was limited from the inflamed joint to a swelling in the hock and fetlock, but the tendons did not participate in the enlargement. Still they would find the disease flying about the body,

like rheumatism, and the horse would become deformed. The horse would have an emaciated appearance, but in chronic rheumatism it would look pretty well. When the face began to swell, there could be no doubt of the presence of the disease, and the probabilities were that the case would terminate fatally. A horse was sent to him for the extraction of a tooth; he did not like the look of the horse at all, and after extracting the tooth, which was diseased and full of pus, he removed the skin and found the bone was very soft and porous. At first he concluded it was the effects of a long continuance of a diseased tooth, but after it was taken out the horse never got up again. It was a case of broken back, and the *post-mortem* of the body showed that the horse was in a state of Osteoporosis. If he had been more careful in his first examination of the horse, he would not have performed the operation at all. There was no enlargement of the face in that case, but Professor Varnell had laid great stress on that symptom, but they might meet with many cases with no enlargement at all. He remembered a case of a pony which was very lame in the hock; he was blistered and medicine administered to him; when the shoe was taken off, there was no indication of any injury and the hock appeared better, but in two hours he was dead lame in both feet, and also in one of the hind feet. The pony was unable to stand, and they had to destroy him. The *post-mortem* revealed the fact that 24 ribs were affected, and the bones were so fragile that 24 of them were fractured. In that case there was scarcely any indication at all of Osteoporosis, and although there was a slight bulging of the face it was one of the last symptoms. The disease was almost as incurable as Lymphadenoma, but he thought it might be prevented to a certain extent. In the cases in which the history of the disease could be traced, he had found they had terminated fatally when there was a deficiency of rain water or lime salt. With regard to the hind leg lameness, he had often heard it said that the difference between a veterinary surgeon and Sir William Gull or Sir William Jenner, was that a veterinary surgeon if consulted upon a hind leg lameness would give his opinion, and not only stick to it but swear he was right. Another veterinary surgeon would examine the same horse, give a contrary opinion, and also swear he was right; but if a patient consulted Sir William Gull as to what was the matter with him, and the former did not know he would say so, which was much better than giving a haphazard opinion, as some veterinary surgeons did at the present time. Referring to the difference between hock lameness and hip lameness, Professor Williams said there might be a wasting of one side of the body, and when horses had been in slings he had treated the muscles of the quarter and hip, and in the course of six weeks he had found a great spavin. In hock lameness, where a spavin had been developed, if they noticed carefully, they would find it was confined to one side of the horse, which they could clearly see if they stood behind it and compared the two sides. They would find the lame side was thinner than the other, and there was a flatness about it, whereas in hip lameness there might be a flatness, but there would also be a wasting of the buttock. Purely hip-joint disease was a very rare thing, but it did occur and was very difficult to deal with, being so deeply situated. The wasting he had referred to was brought under his notice many years ago, and it not only extended to the hip-joint, but also to the buttock. Having made those remarks on the obscure diseases of Lymphadenoma and Osteoporosis he begged to thank them for their patient hearing. (Applause.)

The Professor's interesting address was listened to with the greatest attention and interest, and a vote of thanks unanimously carried. The members afterwards dined together.

CHARLES HARTLEY,
Hon. Sec.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE concluding quarterly meeting for the year was held at the Queen's Hotel, Leeds, on October 30th; the President, Mr. J. E. Scriven, in the chair.

Mr. GREAVES made a few remarks explaining the action of the Council with regard to Clause IX. of the Supplementary Charter.

Mr. W. G. SCHOFIELD was unanimously elected a life member of the National Veterinary Benevolent Society.

Mr. GREENHALGH nominated Mr. Samuel Chambers, Kirkheaton. Mr. SMITH nominated Mr. John Alexander Hodgman, Barnsley.

Mr. J. H. FERGUSON resigned the office of Hon. Treasurer, and also as a member of the Society.

Mr. PARLANE WALKER exhibited and described a number of new obstetric instruments which he intended to submit to the notice of the profession. The hooks, crutch, forceps, etc., were considered to be a great improvement upon the old instruments at present used by the veterinary surgeon.

Mr. T. FLETCHER also exhibited instruments of an improved character.

A long and animated discussion upon mechanical assistance in parturition ensued, in which Messrs. Smith, J. Carter, Deighton, Axe, Greaves, Schofield, Toop, Pickering, Walker, and Fletcher, and other gentlemen joined.

Mr. LODGE described the symptoms, of an occult character, attacking five cattle fatally out of a herd of seven. The majority of the members were of opinion that the disease was Rabies.

Mr. BRIGGS gave the symptoms of a singular case of Hysteria in a mare.

The SECRETARY presented the annual financial statement, showing £54 13s. 10d. to the credit of the Society.

Mr. ANDERTON proposed, and Mr. GREAVES seconded, that Mr. Benjamin Smith, Barnsley, be elected the President for 1886. Carried unanimously.

Messrs. Scriven, Fletcher, and Bell were elected Vice-Presidents. The Hon. Sec. was re-elected.

Mr. CARTER moved, and Mr. SMITH seconded, a vote of thanks to the President, Mr. Scriven, for his efficient conduct in the chair during the year. Carried unanimously.

Mr. SCRIVEN returned thanks.

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE usual quarterly meeting of this Society was held in the London Hotel, Edinburgh, on August 26th, Mr. Hutton, of Kelso, in the chair.

Mr. Barclay, Dunfermline, was elected a member of the society.

It was decided that the hour of meeting should in future be three o'clock instead of two.

Mr. CUNNINGHAM, of Slateford, read the following paper on Bowel Diseases.

A FEW DUST-BALL AND BOWEL CASES—WITH REMARKS.

Mr. President and Gentlemen: I have to give you, as arranged, Notes of Cases not entered on at last meeting, and to these I have added (before and after) a few remarks.

Disease of the Digestive Organs, Bowel Disease, has an interesting—not altogether unpleasing—yet somewhat dread sound in a veterinary surgeon's ear. A list of these diseases brings up, it may be, a long, full, and

rather grim array of cases—old friends and old foes,—the scenes and subjects of many successes, and not a few failures; of many losses and many wins.

Looking back on the last five-and-twenty years, I think I speak the experience of many practitioners when I state my own,—that I have seen more valuable, high-priced, young and middle-aged horses die from stomach and bowel affections, than from all, or almost all, other diseases put together. In importance the subject is second to none. Bowel Disease certainly is not so common as it once was. The days of the boiler and so-called boiled barley that would almost grow again, are shortened. Still the occurrence every now and again of severe, often fatal cases; the loss of some valuable stallion, or mare, or cart or farm horse; to say nothing of the array of Dust-balls and other concretions before us, amply testify to its claims to our very earnest attention.

The causes of Bowel Disease are known to you all; bad feeding, over feeding, under feeding, chills, cold water, kindness, carelessness, all contribute their quota. And when we consider the long hours, the long fasts, the large feeds, the oft changing of fodder, the careful leading to pond or watering-trough at all times and seasons; or, on the other hand, the days in the stable, the full manger and rack, and the want of exercise; when we call to mind the smallness of a horse's stomach, the length and winding and coiling course of the small intestines; the defined position and varying calibre and size of the larger bowels, and the great vascularity, and extreme delicacy and sensibility of the whole alimentary tract; when we know that a partial check to digestion means colic and pain; twist or displacement—unless relieved, strangulation and death; that impaction cannot long exist, and that failure and rupture are certainly fatal;—when, I say, we know and consider these things, we are surprised not that colic and such-like occasionally occur, but that they are of such comparatively rare occurrence as they now fortunately are. Colic cases are crotchety in occurrence; now a few, then a considerable number all at once. We have all, I daresay, observed that a very warm, or a very wet and cold day, or any sudden change of weather, does occasionally—I do not say always—produce as quick and good a crop of colic cases as improper feeding or watering. I think we are a little prone to forget that any extrinsic cause that lowers the vitality, and impairs the energy, and takes away the strength and power of the bowels to do their work, renders them as liable to derangement or disease as any deleterious matter that may be lodged in them.

The cases which absence prevented my bringing forward at last meeting were simply three or four of Dust-ball, two or three of Rupture of the Rectum, and three of recovery from apparent Enteritis. To each of these allow a word.

DUST-BALL.—In connection with this subject, a glance at the process of corn-dressing and milling may be interesting.

Corn or oats in a miller's eyes—at least a Scotch miller's eyes—consist of three parts: the "groat," or oat proper, the outer shell, husk or "seeds," and the filmy dust or oat-hair interposed between them. The miller's object is to separate these three subjects from each other—his business, to make the most of them as feeding stuffs. Lying on the wire floor of the kiln for three or four hours and stirred occasionally, exposed to a good moderate heat, the moisture is driven off, the grain becomes crisp and dry, and is sent down a shoot to bags or benches to cool for twenty-four hours. Elevated to the top of the mill, it is then passed, first under a millstone, then through a perforated-wire cylinder, with revolving shaft and blades, and thirdly the fanners. The mill-stone, set "wide," by a peculiar action raises the oats on end, and gently cracks them, setting groats, dust, and "seeds" at liberty, but mixed with each other. In the cylinder the fine light corn-dust is forced by the revolving blades through the perforated-wire, and

collects in a chamber by itself, while, a little further on, the fanners blow the "seeds" into another corner. After one or two repetitions of this process, the groats are at length ground, or "cut" as it is called, by the mill-stone proper. The rough meal descends, falls on an oscillating screen or sieve, that passing through being meal fit for market; while of that which remains, the "un-cut" grain, finds its way again to the stone, while the light, dusty, seedy portion is blown off, by small cylinder and fanners, as "fine meal seeds." The products then are, meal, fine meal seeds, corn-dust, and rough seeds; and the latter, ground in other mills, gives the fine, yellow, light powder, the beautiful "rinderpest," or "husk-meal," which sets so many mills on fire, and adulterates everything, from the delicacies of the banquet and the oil-cake mill, to the coarse meal of the pigstye.

From this rough sketch of the process we learn that (1) with careful preparation the four products should be quite distinct and free from each other, and *vice versa*. No dust-ball in a Scotchman fed on good oatmeal, whatever may be the fate of his horses; and on the other hand, fairly-bruised or crushed oats may from bad management contain a good deal of "dust." (2) That fine meal seeds given off near the end of the process are valuable, while even the dust and seeds may, from careful preparation, have fair feeding qualities, and well soaked and mashed may, in hard times, be of service with cattle and pigs, in which, singularly enough, dust-balls rarely if ever occur. (3) What we all know and should never forget—that oats, if bruised at all, should be simply flattened and split by rollers with all their natural moisture in them. And (4), what at present is of most consequence to us, that if a horse is fed on oats—especially "kiln-dried oats"—bruised by a mill-stone or even rollers, he is just receiving the dust or oat-hair in a form most favourable for the development of a ball; and from such bruised oats, as we shall presently see, very large dust-balls have, in the course of years, formed.

As in the formation of a "hair-ball," the calf's stomach moulds and shapes, and lays the hairs together in beautifully regular hard-packed order, so, the action of the horse's bowel deposits the filmy light oat-hair or dust on a small piece of stone or a nail, or some such substance, and by gradual addition and accumulation and pressure, lays the foundation for a dust-ball, requiring only time and material to attain the size of those before us. Soaked in the fluids and juices of the stomach and bowels, charged to the full with phosphates and other salts, much of these gradually become deposited on the forming dust-ball, and show through its substance ultimately, as stony-looking envelopes or layers. If the horse is fed on dust, and has poor feeding, the ball forms rapidly; phosphatic layers have little time to form, and the materials for them are scanty. If, on the other hand, the oat-hair or dust is small in quantity, and the feeding rich, the dust columns are slender, and the ball assumes the appearance, and has almost the weight of a calculus.

Dust-balls of the size of fair-sized oranges in about two months, is about the most rapid formation I have been able to trace. Given a rough round nucleus, we will probably have a more or less round ball; while with a flat or irregular-shaped centre, the triangular or hollow flattened shape may, for a time at least, predominate.

The great moulder of the shape of the ball is, however, the bowel itself. How like some dung-balls, without any nucleus, are to dust-balls. The lobulated or kidney-shape arises, I think, from an inherent tendency which some balls have to assume this shape—like salts crystallizing—aided by the rough hay or straw fæces getting fixed in the interstices or clefts, preventing deposition in these clefts while it is going on on the surface.

Case I.—A very large dust-ball, 13½lbs. in weight when fresh, rounded, and

egg-shaped, measuring 11 inches in long diameter by 8 inches across, com posed of alternate layers of dust and phosphatic deposit, evidently a very old ball, having formed, as it were, in stages or at different times. This ball was removed after death from a farm mare twenty-one years old. From Argyle-shire originally, bought at four years old at a low figure,—she was one of those blessings to farmers which in these hard times they so much need. She rapidly proved herself to be double or treble her price, and for eighteen years did her work, and could do it almost to the last as well as the youngest and freshest horse in the stable, being all the time in good health, and scarcely ever sick or sorry. Cold occasionally and a bad quittor, were all the ailments I ever knew her to have. No colic attacks.

She was taken ill for the first time on 26th January last. Received a common colic drench and was relieved. Seized a couple of days after. Constipation for twenty-four hours or so, and got better. During the next eighteen days she had two similar attacks with the same result. The symptoms were simply the ordinary ones. No greatly-accelerated pulse nor fast breathing, not much pain ; no sitting on haunches, nor pressing tail against stall. Very quiet, standing quietly, and lying down slowly and cautiously, and when down apparently half asleep. On the 13th February I saw her in the fore-noon apparently well, and about nine in the evening was called to see her dying. Quiet to the last, she would lower her head slowly to the ground, and fall with her legs doubled under her. Bowel was evidently ruptured.

I was a little late in getting to the knacker's yard next day, and found the man with the ball in his hand gazing with surprise and admiration at it. Balls he and I had seen, but this was evidently the largest one. The ball had been lodged in the colon, between its commencement in the right iliac region and the sigmoid flexure in the left, rupture having taken place about midway. The case seems to show that this situation is very favourable for the development of a large ball, and that here it causes little inconvenience.

The farm steward informs me that the feeding of the horses on the farm from so long as he can remember has not been changed—bruised oats and bran, with hay in winter, and grass or tares in summer.

Case II.—Also a large ball, 9 lbs. in weight when removed ; round, hard, stony-looking exterior, with convoluted appearance, somewhat like that of a brain. Evidently of old standing and formation. Dust inside, phosphatic layers externally.

This ball was got from a Belgian mare, thirteen years old, nine years on same farm. A very healthy good mare, only one attack of colic remembered, though a little subject to weed. She became ill on the 21st December, 1882 ; died 20th Feb., 1883—two months, during which she had repeated and severe attacks of constipation, with symptoms almost exactly the same as No. I. Ill for three or four days, relief for seven or ten, and so on. At the end rupture and ball at the common place, viz., the terminal funnel-shaped ending of the colon in the rectum. The farm grieve tells me that some years before, the feeding during some months was bruised foreign oats mixed with the home-grown oats not bruised, and that this had such a bad effect on the horses that it had to be discontinued. The common feeding of the farm is good oats, generally given whole twice a day in winter with boiled potatoes, and turnips at night and hay ; corn with grass or tares in summer, nothing else.

I have met with two or three cases of dust-ball among Belgian horses, and their comparative fewness in numbers raises the question : Are Belgian horses subject from the feeding they get in their native country to Dust-Ball? Was the process begun when this mare was bought at four years old? or were the foreign bad bruised oats the cause? And being discontinued no more accumulation of dust took place, but simply phosphatic deposit from the rich feeding?

Case III.—A ball of considerable size and age, 5 lbs. weight when removed. Dust and phosphate deposit about equal. Subject—a big brown Clydesdale horse, fifteen years old, eight or nine years on farm, occasionally in local show ring. Passed a small dust once before. Became ill 11th November last. Quiet, but with nasty symptoms. Anxious, haggard, worn-out look. Slight abdominal fulness, pulse high, breathing not much affected, mouth offensive. Scarcely ever down. Next day tail symptom developed to perfection, all round the walls of loose-box were the marks of his rubbing. He would back quietly up to the wall, find a corner and then go rubbing round with his tail and haunches firm against the wall and his head and fore feet towards centre of box. At other times he would stand quietly in the middle of the box, and then take a quick sudden run backwards till his tail and hind end were brought with considerable force against the wall and then go rubbing round as before. He lasted two days, rupture and ball at same place as No. II. Imperfectly cleaned and dirty seeds from one of the mills given each winter with the boiled food, was the evident cause of the ball, together with possibly sandy matter from the cut straw given as fodder.

Case IV.—Lobulated ball, four inches or so in diameter, almost entirely composed of dust. History of case not so well remembered, but for seven weeks this horse had alternate intervals of ease and three or four days of illness. No sitting on haunches, no rubbing of tail. Symptoms like Nos. I. and II.

These cases, gentlemen, have some features in common; others diverse. The subjects were farm horses, on good farms; old horses, never off the farm. Under the same stewards and servants' eyes, and with myself as the veterinary surgeon in attendance. Feeding and symptoms partly alike and partly different. From them I think we may learn—1. That from ordinary farm oats, but more especially from foreign oats, bruised in the ordinary way, dust-balls, like those before you, have been formed, and that one horse may be affected while a dozen in the same stable and on the same feeding for years, may, singularly enough, apparently at least, escape. 2. That while near the junction of the colon and rectum is the common position for dust-ball, yet at the beginning of the colon and anterior to the sigmoid flexure in the widely distended portion forming a half circle on the floor of the abdomen, greater facility is given for the formation of a large ball, and that in this position it appears to give less inconvenience. 3. That, though in some cases the ball may be felt and even removed if fixed in the rectum, still in the cases before us repeated and careful examinations, per rectum, failed in every case to detect even the semblance of the balls. 4. That there is no distinctly characteristic symptom for Dust-ball, the tail symptom, and sitting on the haunches, not being invariably, and from my own experience, not very often present. The quietness, absence of acute symptoms, or any other apparent cause, the recurrent attacks, relieved by medicine, ending generally, at last, by quick, sudden death symptoms from rupture of the bowel are mostly all that are to be depended or relied on. 5. That Dust-ball cases are not readily injured by large doses of purgative medicine, contrasting strongly in this way with cases of Hæmorrhagic Inflammation of the Bowels. When tired out attending, No. II. and No. IV. cases especially, I have given large, even excessive doses of aloes, oil and calomel, combined with opiates, and the result, often to my surprise, was not hurtful but beneficial, often giving relief for a very considerable time. The large *solid* stools which some of these horses occasionally passed requiring to be seen to be believed in—six, or eight, or nine large, fresh, hard stools, lying in the box, in a morning, of a horse that has passed nothing for days, and has as much physic in him as would do for half a dozen—takes one by surprise. 6. We may learn to avoid bad

oats and badly bruised oats. Give fresh corn whole or crushed by rollers only.

On the cases of Rupture of the Rectum we have not time to enter. One was a Belgian gelding recently over, ruptured about two yards from anus by two pretty large balls. Another was a young valuable farm horse found dead one morning. Rectum ruptured one yard from anus by three small balls. Another horse, on same farm, was ill for about a day and a night shortly afterwards; the prominent symptom in his case being long-continued and persistently lying on his back with legs doubled on his belly. The passing of two small balls saved him. Another case of Rupture of Rectum I saw last summer, and another last Thursday—very singular out-of-the-way cases. No very alarming or very uncommon symptoms during life, but *post-mortem* examination in the one case disclosed adhesions of several days' standing between a part of the colon, the rectum, and the bladder, both rectum and bladder being ruptured; and in the other case, the colon displaced considerably, the omentum lacerated and turned round part of the bowel, and almost black from distension and strangulation; adhesions with flakes of yellow, solid lymph, interposed between parts of the small intestines and rectum, the latter fearfully inflamed and ruptured near its beginning, sufficiently to admit one's two hands. And this horse lived from Sunday to Thursday morning, very quietly, making little to do; no sweatings or shiverings, nor other such signs.

On the cases of recovery from apparent Enteritis, just one word. With the dread symptoms of this disorder we are all too familiar. When fairly established it generally means death. Suffice it to say, that the anxious, haggard look, the running-down pulse, the snorting, see-saw breathing, equal in inspiration and expiration, the rapid weakness, the inability to stand or even to lie, the full abdomen, patchy sweatings, etc., etc., were all present. One even on recovery passed a large hæmorrhagic mass, and his fæces had the usual dirty-red colour for a considerable time afterwards, and yet these cases did well. The only treatment adopted being a small quantity of really good linseed oil at first, combined with large doses of opium and belladonna, ranging from 3 drs. of powdered opium, 3, 4, or even 6 drs. of belladonna, given with no very measured hand, and repeated two or three times, and in one case a dram of calomel thrown on the tongue. One of the horses was bathed throughout the night, the others were simply severely rubbed with strong mustard all over the abdomen. Smoke injections. A warm comfortable box and fluid food for days afterwards: nothing else.

And now in closing. What is this inflammation—this hæmorrhagic inflammation of the bowels? A favourite cob or mare has been working hard, he is laid off lame, and your man is very kind to him, and at night you are suddenly summoned to find the cob that has carried you so long, and which you know has never had a touch of colic in its life, posting on in two short hours to its end. A farmer buys a horse young and cheap in poor condition; he is good to it, it does well and thrives. He is proud of his bargain, and suddenly on the road it takes ill, and in a couple of hours you tell him to prepare for the worst, for though his horse may live till the morning it will certainly die. A horse passes your place with his load at 9 o'clock in the morning, goes three miles—is seized, returns, and by 12 o'clock lies a carcase in your box, after a few hours of ceaseless agony. This is worse than cholera? What is this disease? You examine the carcase and find the veins superficial and deep, filled with black, tarry-fluid-looking blood; the abdomen quarter full of thin, watery, dark purple or rusty-coloured serum; the stomach and bowels with considerable contents, but not more than many a healthy horse in full feeding. The mucous membrane of stomach congested and its villous portion inflamed and eroded,

the secretions sour and acid, the small intestines congested and inflamed, and their contents acrid and high coloured. Rectum not much amiss, but the cæcum and colon tell another tale. Purple-looking, black and dirty-coloured inside, thickened and swollen to half an inch or an inch in thickness, with contents partly solid and partly fluid and purple-coloured, we find in them the true seat of this hæmorrhagic inflammation. Take a piece of healthy large intestine, examine it carefully, and you find it is about the eighth of an inch thick, the muscular and peritoneal coats are firmly attached, and adherent to each other, while the internal mucous is loosely attached by cellular tissue to the muscular, with a considerable amount of fat interposed, forming a sort of cushion or bed, in which the lacteals and blood-vessels may lie and ramify. All the three coats are pale and destitute of high colouring.

Take an inflamed piece of large intestine; dissect it carefully; you find a quarter or half an inch or even one inch in thickness, firm and dense, and almost hard to the feel. The peritoneal and muscular coats still adhere closely, but they are thickened, and swollen, and soaked with effusion. Still they do not seem to be acutely or actively inflamed. The mucous coat is black or dark-purple coloured, the seat of most intense and evidently acute inflammation (or it may be passive congestion), but not much thickened; its inner lining is black and dirty-coloured, studded with minute openings, while the space between the mucous and muscular layers is filled and gorged and swelled with effusion, the chief cause by far of the increased thickness of the bowel, and this effusion is clear, not dark-coloured at all. While in the peritoneal folds connecting the divisions of the gut, lymph watery but clear, and amber-coloured, as from a Pleuro-pneumonia lung, may in abundance be found.

If this is simple acute inflammation, and nothing else, where in the animal economy have we another example of such rapid, fatal, and extraordinary results in the space of a few hours from simple, pure, acute inflammation, and nothing else?

Is it due simply and solely to the presence and mechanical irritation produced by large quantities of indigested material in the organs? Then, surely, a horse with a thirteen-pound dust-ball, or one packed with fodder beside, should be its readiest victim. But we know that such is not the case. Is embolism the cause? I believe, in one or two instances, one might be justified in saying so. Is it Anthrax? I do not think the lesions justify that conclusion. Is twist or displacement the key to the mystery? I believe in some this does supply the key, and that some of the so-called cases of inflamed bowels are simply cases of twist or displacement; but, on the other hand, of the many cases I have examined after death, only in a few, comparatively, have I been able to trace any distinct twist into-susception or strangulation.

A horse stands on a wet day idle in his stall, eating wet grass, and goes down at night with inflamed bowels. Another, in similar circumstances, takes a severe "weed." Is "weed" plain, simple inflammation of the tissues of the leg? We know its exudatory capabilities. Have we such a thing as Lymphangitis of the Bowel? The colon and the cæcum lie on the floor of the abdomen, they are the most dependent parts of the bowels; farthest from the centre of circulation. Is Enteritis wholly or partly Lymphangitis of the Bowel?

A riding-horse stands idle in his box for ten days, and his hay is not very good. His owner takes him out, and he gets him only a mile; muscles of haunches and loins and thighs and almost all over body, all at once become hard and full-looking, and we know the premonitory symptoms of Azoturea. Rest, physic, and hand-rubbing save him. His owner is warned of the danger averted; but he takes the horse home and lets him stand and feed

as before, and late at night, about ten days after, down goes the horse with so-called inflammation of the bowels; no saving this time. Have we here two diseases closely akin?—two sons of the same parents—and does "weed" make the triplet? From the second cervical vertebra, down along the spine, under the spine of the ileum, down to the sacro-sciatic ligament, on each side, I have traced the dark-bloody effusion of Azoturea. No one surely will say that this is simple inflammation only. Is the clear exudation of Enteritis found in abundance after three or four hours' illness, in the substance of the bowel, and the dark-bloody discharge from its inner surface, plain, simple inflammation?

Into the matter we cannot further enter. My own opinion is that Enteritis is not plain simple Inflammation of the bowel; not caused solely by irritants in the organs, though aggravated by them; that it is not more plainly and simply inflammatory in its nature than weed or Azoturea, but that it is a specific disease brought on by causes somewhat similar to those diseases, striking the bowels as they strike the legs and loins, and developing itself suddenly, rapidly, and almost always fatally. As to treatment I have not much to advance. From its very nature when once fairly established, I believe recovery is very doubtful. Opiates? People say belladonna and opium counteract each other. I have not found this the case. I know of nothing better in this case. Avoid aloes as poison. An exudative disease, as I believe it, I depend now very much on mustard rubbed well and long on the surface of the belly. A good effusion there may ward off or mitigate the inward tendency. And it is rather singular that when Enteritis once sets fairly in, you can get no swelling on the surface of the belly by almost any means you can try.

But now, gentlemen, I must stop. Your patience is long since exhausted. Common cases these. "Much ado about nothing"—you will say. Is it nothing to the poor owner, whose cheque for £50 or £100 has suddenly become changed into a carcase worth 10s.? Is it nothing to the practitioner in attendance, powerless to help, feeling for the owner, the patient, and feeling for himself? Is it nothing to the poor animal with agony painted in every feature of his fast-sinking frame. Study those bowel diseases, gentlemen. Of all diseases, except Tetanus, they appear to be the most acutely painful. Let not our students and young practitioners sigh, because there are "no other worlds to conquer." Within the four abdominal walls are secrets sufficient for the next generation at least. Do your best to prevent, cure, or alleviate abdominal disease. And if your reward comes not in the way you may desire, yet come it will.

Professor WALLEY then read the following notes on a case of

KIDNEY DISEASE.

The Kidney of a Pig.—Eight months old, with a darning needle lodged in its structure, sent by Mr. William Kirk, M.R.C.V.S. The needle occupied a horizontal position on one side of the kidney, and was embedded to a depth of about one-eighth of an inch. The tissues of the kidney in its immediate vicinity gave evidence of inflammation, but the covering of the organ did not appear to have been materially irritated. The needle was corroded, showing that it had been *in situ* for several weeks. The symptoms presented during life were colicy pains and partial loss of appetite. The needle had evidently been ingested by the animal with its food, and had passed through the walls of the stomach, and travelled thence to the kidney. Such an occurrence, though common in cattle, is very rare in the pig.

The meeting terminated with the usual vote of thanks.

T. HERBERT LEWIS, *Hon. Sec.*

NEW VETERINARY COLLEGE, EDINBURGH.

ON Wednesday, the 28th October, the session of the New Veterinary College, Leith Walk, was opened with an address by Professor A. N. M'Alpine, B.Sc. Lond., Professor of Botany. Professor Williams, Principal of the College. presided ; and there were present, amongst others :—Mr. Borthwick, Kirkliston ; Mr. Cunningham, Slateford ; Mr. Malcolm Macgregor, S.S.C. ; Colonel Milne, London ; Mr. Henderson, manager of the Clydesdale Bank ; Messrs. Aitken, Dalkeith ; Revs. Mr. Ellis and Mr. Owen, of St. Paul's ; Mr. Connochie, sen., and Mr. Connochie, jun., Selkirk ; Mr. Boyd, Melrose ; Mr. Dalling, Bathgate ; Mr. Cartwright, Wolverhampton ; Mr. Yardley, Bloxman ; Mr. Durkie, Dundee ; ex-Councillor Sloan, Edinburgh ; Mr. Storie, East Linton ; Mr W. Ballantyne, Captain Webb, Mr. Burnet, Maybole ; Mr. Walker, Edinburgh ; Messrs. Aitken, Edinburgh ; Mr. Lawson, Mr. Adamson, India, etc. There was a crowded attendance of students, auguring for the College as successful a course as last year, when 170 students took the classes.

The PRINCIPAL said he never thought of the rapid progress of veterinary science and its teaching without being reminded of the solitary man (Mr. Dick) who, sixty-two years ago, for a year or two lectured to one student in Edinburgh ; that was its commencement in Scotland. Now there were four colleges in the United Kingdom, teaching all the branches of veterinary science, all well equipped and well attended. Having referred to the controversy which went on for a time between the North and the South regarding veterinary science, he pointed to the entire change which had taken place—how Scotch and English colleges emulate each other. Among the compatriots of Mr. Dick was Mr. John Barlow, who did much for the practical aspect of the subject. Now an ardent disciple of Mr. Dick's is at the head of the London college, and English students are teaching in Scotch colleges.

Professor M'ALPINE then delivered an address on pastures, and made the following observations :—

As civilisation advances, the relations between different peoples and countries necessarily change, and this involves in a very high degree changes in the agricultural operations of a country. If the agriculturist does not adapt himself to the new relationships and conditions imposed upon him, he must in the long run be the loser, and the whole country will suffer. At the end of last century, for example, each country had to produce for itself all the necessaries of life, and the processes of agriculture were of a general kind, as yet not specialised. This state of affairs persists even now in remote country districts out of the reach of railways. Between 1830-40 the extensive introduction of railways, and consequent facility of transport, forced on extensive agricultural changes, and agriculture commenced its advance from the general to the special.

Let us take Switzerland as an example of what I mean. I purposely select Switzerland, because there the conditions of the case were such as to force rapidly along those changes which in our country have gone on more slowly, and are even now in course of accomplishment. Strive to evade them how we will, they are bound to come. Before the introduction of railways, Switzerland produced for itself all the necessaries of life ; but the production of grain was very fickle on account of the moistness of its climate, although admirably adapted for the production of fodder and for stock rearing. In its neighbourhood lay countries, such as Hungary, admirably adapted for grain production. Thus, in this case, it is plain that the introduction of railways would rapidly and naturally lead to a diminution in the amount of grain production, and a corresponding increase in fodder and

stock production. Year after year the attention of the agriculturist would be more and more concentrated on the production of stock and the utilisation of the products yielded by the stock. In this way the agriculture of Switzerland became changed from the general to the special. Cheese production became the great speciality, and every one has heard of the famous Swiss cheese. Thus Switzerland commenced to export cheese ; the amount exported gradually increased, and the prices it brought in the market rose. In 1851 the amount of annual export was roughly 100,000 cwt. ; while in 1881, in the space of thirty years, the amount annually exported was quadrupled. In 1851 the best kinds were sold at about £2 10s. per cwt. ; while in 1881 the price had risen 50 per cent., to £3 15s. per cwt. The same changes occurred in the export of cattle ; the amount exported and the prices they brought gradually increased. Let us look now at the results, which followed from the diminished production of grain crop in Switzerland. One might at first suppose that the prices of grain would have increased, but that is not the case. As many countries are favourably situated for the production of grain, as facilities for transport increase, and freights become lower, the prices of grain also become less ; and such was the case in Switzerland. But this reduction in the prices of cereals, due to increased facilities of transport, is perhaps best seen by considering the prices in England. The prices of wheat per imperial quarter were roughly as follows :—1811-1820, £4 7s. ; 1821-1830, £2 19s. ; 1831-1840, £2 16s. ; 1841-1850, £2 13s. ; 1851-1860, £2 14s. ; 1861-1870, £2 11s. Thus it comes about that in those neighbourhoods where the production of grain crops was fickle, the attention of the agriculturists was directed more and more to the production of fodder and stock. That this is so is most plainly seen when we compare the different amounts of grass land at different periods. In the canton of Zurich the amounts were :—

	Acres under grass.	Acres of other cultivated land.	Total acreage.
1775	67,000	174,000	241,000
1840	116,000	125,000	249,000
1876	152,000	92,000	244,000

That the same change is going on in Britain is plainly seen from the following statistics :—In 1874 the amount of land devoted to the production of fodder was 20,579,000 acres, whereas in the space of seven years (in 1881) it had increased by one-and-a-quarter million acres. The amount of land under wheat has undergone a corresponding decrease. The amount of land under permanent pasture increased by more than three million acres in thirteen years, viz., from 1867-1880. It will then be seen that Britain, like Switzerland, is being forced to produce less grain and more fodder and stock, and in the future this change will require to be carried on to a much greater extent than now. Any artificial means which may be taken to retard this change must, in the long run, prove disadvantageous to our country. The history of Switzerland is apparently that which England has to go through.

Let us glance for an instance at the production of grain crops in America in order to see why we must have more fodder and less grain production in Britain. In North America, in 1863, thirteen million acres were under wheat. The number of acres gradually rose, and in 1880, in the space of seventeen years, the amount was almost trebled, reaching thirty-five million acres. In 1863, 174 million bushels of wheat were produced, and in 1880 the production had increased to 498 millions—that is to say, was almost trebled. Notice now the amount of wheat exported, for that is a very important point in my argument. In 1863 it was, roughly, thirteen million tons, while in 1880 it rose to forty million tons. The amount of wheat exported was more

than trebled in seventeen years. Look, further, at the cost of wheat production in America. The manure costs nothing, because of the natural richness of the land, and will probably cost little or nothing for many years to come. The ground, in many cases, costs little or nothing. Agricultural machinery is cheap and good. Hence the actual cost of wheat production is very low, about 1s. 3d. per bushel. Add to this the cost of transport, and it would appear as if American grain can be brought to British markets and sold at prices with which our farmers can hardly compete. When the Panama Canal is opened the cost of transport will be about one-half of what it is now, and then California and San Francisco will become our great granaries. There is no rosy prospect in connection with grain production in our country, and hence it is inevitable that grain production will still further diminish, and our greatest attention will be directed to fodder and stock. Our farmers will show their wisdom by adapting themselves to these natural conditions at the earliest possible moment; it will be ruinous if they adhere to the old traditions. The great importance of good fodder and good pastures is beginning to be recognised by our agricultural societies. Professor Wallace, now an ornament of our University, has pointed out the important part they are destined to play in the future history of our country.

On the motion of the REV. JAMES OVEREND a hearty vote of thanks was awarded Professor M'Alpine.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AT the monthly Council meeting, held on November 4th, His Royal Highness, the Prince of Wales, K.G., President, in the chair, in considering veterinary matters,

Colonel KINGSCOTE presented the following report by Professor Cope :—

"Since the last committee meeting in August, the following outbreaks of Foot-and-Mouth Disease have been reported:—

"The outbreak at Ampthill Park, Beds, which occurred on July 11th, ceased on August 29th, without extending from that centre.

"In Cheshire the disease was detected among some cattle in the neighbourhood of Helsby and Mickle Trafford about August 8th, and extended to 10 different farms or premises, containing 168 head of cattle, 85 of which became affected. The whole of the cattle recovered by September 19th.

"The disease next appeared on a farm in Leicestershire on August 22nd. There were four cattle and 10 sheep on the premises. Two of the cattle were reported affected, and the Local Authority slaughtered all the animals, and stamped out the disease.

"About the end of August the disease was reported on a farm near Retford. Of four cattle on the premises one was said to have been affected. The whole of the cattle were slaughtered by the Local Authority.

"On September 1st and 5th outbreaks occurred in the county of Rutland. Of 23 cattle on these farms 13 became affected.

"On September 9th it appeared in Norfolk, where seven outbreaks occurred between September 9th and October 30th. Of 89 cattle on the premises 69 took the disease.

"Three outbreaks occurred in Lincolnshire between September 13th and 30th. Of 34 cattle on the farms 32 became affected with the disease."

Professor COPE also reported that in the week ending June 13th there were 348 outbreaks of Swine Fever. On July 20th an Order came in force to close the markets, and in the week ending October 24th the outbreaks had decreased to 94.

Colonel KINGSCOTE, in moving the adoption of the report, stated that the following letter, by one of the Society's provincial veterinary surgeons, had been received too late to appear in the Committee's report :—

"I have no report of importance to make for the past year. Diseases of an epidemic or an endemic nature have not prevailed.

"I have had several severe cases of Sporadic Typhoid Influenza, which could, in most instances, be traced to empirical treatment and want of cleanliness.

"I may, however, mention a case of Rabies in cattle which has come under my notice.

"A herd of 40 Irish yearlings were purchased in Bristol in September last, and brought home on the 10th of the same month. In a few days afterwards one of them was observed to separate itself from the others, and to gallop wildly about, bellowing continually. It was brought to house, and I was sent for. Upon my arrival I found the animal dead. My attention was now called to another of the herd. I found this animal foaming at the mouth, galloping furiously about the field, and bellowing continuously, until, from sheer exhaustion, it would tumble down, continue bellowing, and foaming at the mouth. I at once ordered it to be destroyed and buried.

"I now proceeded to make a *post-mortem* examination of the animal first affected, and suffice it to observe that all the appearances confirmed my opinion as to the nature of the disease.

"On the following day a third of the herd became affected, and in accordance with my orders was at once brought in. I now had an opportunity of closely observing every symptom.

"There was perpetual bellowing, a hoarse noise being made, as though Sore Throat were present, of an ordinary nature, but manipulation of the throat produced no pain; foaming at the mouth, refusal of food, would plunge the mouth into a trough of water, but was unable to swallow, and the effort produced spasm and great pain. On the following day the symptoms became much worse, the sense of hearing became painfully sensitive, the slightest sound disturbed it, set it bellowing, and rendered it furious. Third day, animal worse, more violent, would attack any person within its reach; there was Amucosis of the near eye. It was found dead on the following morning, lying by the trough of water, having evidently died when making an effort to drink, the nostrils being full of water.

"Within the past few years I have seen Rabies in cattle, sheep, dogs, and cats; and as this fearful malady continues to steadily increase, I would presume to observe that the authorities would do well to adopt proper measures to prevent its spread, and one of the most potent measures would be to put a much heavier tax upon dogs than at present exists.

"It is the poacher's lurcher and mongrel rabbit-terrier, possessed by men who can contrive to starve their families to pay 7s. 6d. for a dog to assist them in committing depredations upon their neighbour's property; and to be the means of spreading the dreadful disease of Hydrophobia amongst their fellow-men.—I remain, my Lords and Gentlemen, your obedient servant,

"GEO. LEWIS, M.R.C.V.S.

"Monmouth, November 3rd, 1885."

Referring to the report of the Committee, Colonel KINGSCOTE said that although it was an encouraging report, it did not appear how these outbreaks occurred. He believed that at the Committee meeting yesterday Professor Brown told them that the Privy Council left it to the Local Authorities to deal with the matter, but he did not think that course so effectual as sending some one down to inquire into their causes. It might be that the disease came spontaneously, but he himself did not believe in that. The Agricultural Department of the Privy Council are now, he believed, prepared, in case of another outbreak of Foot-and-Mouth Disease, to make an investigation to see how long the germs had lain dormant, and that on such experiments money could not be better spent by the Government.

Professor BROWN stated that with regard to inquiry into outbreaks of disease and the vitality of disease germs, inquiries had been going on for the last ten years, here and on the Continent. With reference to the Foot-and-Mouth Disease especially, he was now prepared to obtain some virus and carry on some experiments. He pointed out that so far back as 1880 M. Pasteur had begun his experiments on Hydrophobia, and they had been continued up to the present moment, and it was only last week that M. Pasteur was able to state to the Paris Academy of Sciences that he *thought* he had arrived at a result of practical importance. It would therefore be seen that such investigations occupy time.

Mr. JAMES HOWARD, M.P., concurred with Colonel Kingscote in considering that it was necessary to have a definite opinion as to the duration of life of the germs of contagious disease. He trusted that this investigation would commence in the case of another outbreak. He believed the Privy Council of Inspectors knew no more of the subject than they did ten years ago. (Professor Brown assented.) He did not think that the visit of a single Inspector to the scene of the outbreak should be short, as there was surely enough money in the Treasury to bear any necessary expense.

Mr. WELLS drew attention to the late great prevalence of Swine Fever, which was almost as serious as the other disease. He had been informed that in his small county (Huntingdon), the payments by the Local Authorities, in six months, amounted to over £300. People had become very dissatisfied with the state of the law.

In reply to Sir Massey Lopes, Professor BROWN said that he could, without hesitation, state that there was no money nor other necessary means at the disposal of the Agricultural Department of the Privy Council for the purpose of investigation, on a sufficiently extensive scale, respecting the origin of outbreaks of disease. The object of the Act of 1878 was to stamp out disease rather than to inquire into its nature. Mr. Dent had said yesterday that the first step necessary in order to stamp out disease was to ascertain its origin, but he could not agree with him. He considered the prospects of Swine Fever satisfactory. He stated that the disease had long been known in this country, and had done a great deal of damage. Professor Brown then stated that the number of pigs affected in June last was nearly 400; an Order then came in force regulating markets, and the result was that the number of outbreaks last week had declined to about 90. The scheme in the future would be, when the disease had been reduced to very small limits, to order the slaughter of every pig in the infected places. In further reply to Mr. Howard, Professor Brown stated that, as far as they knew from evidence, Swine Fever was as contagious as Cattle Plague.

Colonel KINGSCOTE considered that it would strengthen the hands of the Department if the Council made a representation to the Government, and he therefore moved that the Veterinary Committee should report to the Council at their December meeting as to passing a special resolution, asking the Government to grant means for making the investigations required.

This motion was seconded by Sir MASSEY LOPES, and carried unanimously.

Colonel KINGSCOTE also gave notice that at the next meeting of the Council the Chairman would move for the renewal of the Veterinary Grant for 1886.

Obituary.

We regret to announce the death of Joseph Freeman, M.R.C.V.S., of Keyingham, East Yorkshire, on August 29th. The deceased graduated in 1859.

Mr. E. M. Perry, M.R.C.V.S., Mass., U.S.A., who graduated in 1878, is reported dead.

We have also to deplore the death of Inspecting Veterinary Surgeon E. J. Batt, of the Indian Veterinary Department, which occurred at Mussowrie, in the Himalayas, on the 29th October, from liver disease. Mr. Batt obtained his diploma in April, 1858, and joined the late East India Company's service. He was employed for many years in the Bengal Government studs, and was afterwards Assistant Superintendent of Horse-breeding in the North-West Provinces. Being of most amiable disposition, and a fine sportsman, he was an universal favourite throughout India.

H. M. Kohne, formerly Professor in the Hanover Veterinary School, author of "Handbuch der Allgemeinen Pathologie," and who was held in high esteem in Germany, died recently at Hamburg, aged sixty-two years.

We are also informed of the death of Professor Prosch, of the Copenhagen Veterinary School.

Correspondence.

CASTRATION.

SIR,—The method of castrating bulls in Ceylon, described in the "Notes and News" of the VETERINARY JOURNAL for November, is by no means confined to that country, but is commonly practised in many parts of India.

On the Government cattle farm at Hissar, in the southern Punjab, kept for the purpose of supplying the large bullocks required by the Commissariat and the Elephant Batteries of Artillery, castration is performed in the following manner :—

The young bull being cast, his testicles are placed upon a solid block of wood, and one tremendous blow is given to each of them with a heavy wooden beetle, after which the animal is turned loose.

I never had an opportunity of seeing the operation, but the military superintendent of the farm, who described it, assured me that, although the pain might be very great at the moment when the blow is given, the bulls did not appear to suffer much afterwards.

J. J. MEYRICK, F.R.C.V.S.,
Army Veterinary Inspector.

VOMITION IN THE HORSE.

SIR,—The case of vomition in a horse, recorded by Mr. Bonhill in the VETERINARY JOURNAL for November, reminds me of one which occurred in my own practice, when living in Montgomeryshire, about twenty-seven years ago.

A farmer called me in to attend a nearly full grown colt which had for a short time previously been in the habit of vomiting. The animal was at grass and, at intervals of several hours, used to arch his back, strain violently, and suddenly throw up, through the nostrils only, about a bucketful of half-digested food ; after which he would commence feeding without showing further signs of uneasiness.

He was in fair condition, and on examination I could detect no other symptoms of illness.

I thought that the vomition might, perhaps, be produced by the irritation of some hard, indigestible substance, which could not pass through the pyloric orifice, and therefore administered a strong dose of aloes in solution, with the hope of stimulating the stomach to increased action.

Whatever the cause may have been, the colt left off vomiting from the time the medicine was given.

This is the only instance of the kind I have ever seen, except in connection with rupture of the stomach or small intestines. In such cases vomition

has almost invariably been present, but only a few ounces of food have passed through the nostrils at a time.

J. J. MEYRICK, F.R.C.V.S.,
Army Veterinary Inspector.

London, *Nov. 12th*, 1885.

ACTINOMYCOSIS AND ITS TREATMENT.

SIR,—In this month's number of the VETERINARY JOURNAL, I find an article on Actinomycosis and its treatment, by Mr. J. Brodie Gresswell, M.R.C.V.S, Louth.

This gentleman speaks highly of iodine and carbolic acid, and its curative properties in Actinomycosis. I can fully corroborate this statement, having adopted this treatment, for upwards of two years, in several cases that have come under my observation.

During the Spring of 1883, a client of mine purchased ten bullocks; they were turned out to grass for feeding purposes, and in the autumn, when they were taken into the strawyards, I was requested to attend one of these bullocks. On examination I found I had a well-marked case of Actinomycosis. The symptoms I need not here mention; they were similar to those so well described by Mr. Gresswell. My patient being in good condition, I advised the owner to have him slaughtered at once; this he readily consented to do. I procured the tongue and forwarded it to Professor T. Walley, at the same time asking his opinion as to the nature and treatment of this disease. A few days afterwards I received a reply, advising that I should carefully and deeply scrape the diseased patches, and apply freely a mixture of carbolic acid and strong tincture of iodine; this I did with excellent results. Professor Walley further advised me to take my morphia syringe, and inject some of this iodine and carbolic acid mixture to the depth of half an inch into the tongue, in cases of Actinomycosis.

About a month after forwarding the above-named specimen to the Professor, the same client requested me to visit the remaining nine bullocks, as he believed some others were suffering from the same disease as the one I recommended to be slaughtered.

On my arrival at the farm I examined the nine animals, and found two three-year-old bullocks suffering from Actinomycosis. I thought this a good opportunity to treat these cases with my hypodermic syringe, using it as an irrigator. With this small instrument I experienced some difficulty, as my syringe was scarcely strong enough for such indurated organs as actinomycosed tongues; by perseverance, however, I overcame this difficulty as well as I could expect.

After I had treated these two particular cases in this manner, the animals made a rapid recovery. I considered them practically cured, and when fattened and slaughtered each weighed over 60 stones.

A short time afterwards I was again asked to look at another of these bullocks, one of the remaining seven (and which had, previous to this, shewn no symptom of disease); here, again, I found a case of Actinomycosis. This fourth bullock, out of ten, brought me to the conclusion that this disease was highly contagious. This case I did not treat, as the owner had all the seven remaining animals slaughtered, as he said, without any further trouble or expense.

At the meeting of the Lincolnshire Veterinary Medical Society, held at Grantham, on January 6th, 1885, Professor Walley in his paper on "Special Forms of Stomatitis Treatment, etc.," says nothing can succeed better than a strong tincture of iodine and carbolic acid, in the treatment of Actinomycosis; *vide* VETERINARY JOURNAL, April, 1885, page 281.

LIONEL L. LEACH, M.R.C.V.S.

Bargate, Boston, *Nov. 12th*, 1885.

THE PROFESSION IN NEW SOUTH WALES.

SIR,—In the October number of your valuable Journal. "W. F. S." asks what prospects there are for members of the profession in New South Wales, or any of the Australian colonies, and whether emigration is likely to be a successful venture. And further, are any of the Government or army appointments obtainable by English veterinary surgeons? I have inquired from several friends as to the prospects of a veterinary surgeon in New Zealand, and am informed that there are plenty of men practising the veterinary art in that colony who work for a mere trifle. In answer to his second question, I will give the substance of a letter I have received from the secretary to the Agent-General for New South Wales in Great Britain. He says that the Agent-General has no intimation that there are openings in the army of New South Wales for members of the Royal College of Veterinary Surgeons, but is of opinion that there are plenty of applicants on the spot for any vacancies that may arise. All appointments are made in the colony by the Hon. the Colonial Secretary, Sydney. F. G. A.

ADVERTISING.

SIR,—May I trouble you for your opinion upon the enclosed advertisements taken from the "Farm and Home"? Is it justifiable for members of the Royal College of Veterinary Surgeons to take advantage of such means to add to their income, or is it not rather justifying the action of farmers who use nostrums advertised by firms whose business it is to supply them with medicine-chests for the use of their sick patients, and against whom there was such a great outcry a while since by the profession?

I enclose my card. JUSTICE.

[Another correspondent, "Etiquette," also sends a number of advertisements of members, cut from various newspapers. If members of the medical profession advertised in the same fashion, we know what would happen.—ED. *V. J.*]

TO CORRESPONDENTS.

Several communications and reports of societies are, in consequence of pressure on our space, held over until next month.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from Professor Lewis, Edinburgh; W. Penhale, Barnstaple; J. D. Allman, London; J. Matthews, Royal Horse Guards, London; J. J. Meyrick, C.B., A.V.D., London; S. Wiltshire, Natal; R. Tweedley, Glasgow; T. Marriott, A.V.D., India; R. W. Burke, A.V.D., India; A. J. Haslam, Egypt; J. B. Wolstenholme, Manchester; "Justice"; H. Tanner, London; L. L. Leach, Boston; "Etiquette"; R. H. Dyer, Limerick; K. Winslow, Boston, U.S.A.; H. Leeney, East Grinstead; J. Freeman, Hull; G. Kinnell, St. Austell; W. Broughton, Leeds; C. Hartley, Lincoln; "F. G. A."; J. F. Oliver, London; J. Donald, Wigton; F. G. Ashley, Wigton; Professor Walley, Edinburgh; W. O. Williams, Edinburgh.

BOOKS AND PAMPHLETS: Twaalfde Jaarverslag van het Parc Vaccinogène bij's Rijks Veeartsenijschool te Utrecht; La Peripneumonie Bovine dans les Basses-Pyrénées; *M. Cornevin*, Première Etude sur le Rouget du Porc; Dictionnaire Vétérinaire (Vol. xiii.); *M. H. Bouley*, La Nouvelle Vaccination.

JOURNALS, ETC.: *Echo Vétérinaire; British Medical Journal; Wochenschrift für Thierheilkunde und Viehzucht; Lancet; Annales de Médicine Vétérinaire; Recueil de Médicine Vétérinaire; Revista Argentina de Ciencas Medicas; North British Agriculturist; Repertorium fur Thierheilkunde; Der Thierarzt; Der Hufschmied; Journal of the National Agricultural Society of Victoria; Revista Popular de la Exposicion Rural.*

NEWSPAPERS: *Congleton and Macclesfield Mercury; Scotsman; Manchester Guardian; Bell's Messenger.*